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## ABSTRACT

This two-part paper details both a method of arriving at a multiple needs assessment, and relates the process to strategy-planning and evaluation. The assessment procedure is based on the analysis of individual differences in a number of affective, social interaction, and motivation areas by a computer process. On the basis of such individual appraisal, the characteristics of classrooms, grades and other units can be obtained. (Author)

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SYSTEM-WIDE ANALYSIS OF SOCIAL INTERACTION  
AND AFFECTIVE PROBLEMS IN SCHOOLS

Part I  
Multiple Needs Assessment in the  
Elementary School

Part II  
A Model for Policy Making

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January 30, 1973

Abstract

This paper in its two parts details both a method of arriving at a multiple needs assessment, and relates the process to strategy-planning and evaluation. The assessment procedure is based on the analysis of individual differences in a number of affective, social interaction, and motivation areas by a computer process. On the basis of such individual appraisal, the characteristics of classrooms, grades and other units can be obtained.

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CG 008 027

Part I  
Multiple Needs Assessment in the Elementary School's

The problem of effecting change in the schools is monumental. This is so because human learning is cumulative and interactive. It is influenced by other students, teachers, curriculum, parental, and environmental factors. Teachers, counselors, school psychologists, curriculum specialists and administrators are all in need of information about individual differences in order to make decisions about the allocation of limited resources. This information must not only consist of achievement scores, but social and affective data. If the school is to prevent rather than respond to problems, it must consider evaluation as a prime means of decision-making. Evaluation must serve a reflective and corrective function in policy decisions.

Specifically, school personnel need information how to allocate rather limited resources in such a way that the school effort can be maximized. This means that along the developmental continuum, learning must be looked at as an interaction composed of socio-economic, self-concept, group interaction and self-management variables which are in some way or other predictive of task-oriented achievement. Moreover, the research supporting policy-making must be capable of replication under many differing circumstances, outside the laboratory, and not only be concerned with changes in achievement test data.

Logically, it then follows that there is a need for determining, at an early age, who is presenting learning problems in the school, and then determining strategies of behavior change or intervention. In short, there is a need to (a) identify

methods of screening large groups of children by a comprehensive, economical, effective, and non-offensive psychometric method, (b) identify methods of using multiple-input predictors that approximate real life inputs, (c) develop a parsimonious procedure for interpreting these results, (d) relate such results to a logic of intervention, (e) make a set of policy judgments about the allocation of resources, needed training programs and cost-effectiveness, and (f) evaluate both the consequences of research and the process.

The purpose of this paper is to describe a multi-method multi-trait system for evaluating social and affective variables in the elementary classroom by a computer technology. The system known as the Barclay Classroom Climate Inventory (hereafter abbreviated to BCCI) is appropriate to grades two through six, possesses the capability of describing individuals and cumulating individual characteristics into description of classroom units. This paper will (1) describe the system, (2) discuss individual inter-district and intra-district analysis methods, and (3) draw some implications for a preventive-intervention model. It is believed that this system provides relevant diagnostic information about affective and social variables that are related to and in fact mediate progress towards task-oriented achievement.

#### Instrumentation

Over a period of seventeen years I have worked on a multi-method multi-trait instrument to assess differences in the classroom. It is an inventory that employs three methods of

assessment : self-report, peer nominations, and teacher judgments.<sup>1</sup> Under the self-report section it includes a portion relating to self-competency skills ( I can run fast, I like to listen to others etc.), a section relating to reinforcers (candy, money, doing something fun with parents etc.), and a section relating to vocational awareness (interest in various occupations or skills relating to such occupations). The peer section is composed of 26 group nominations that relate to who can do a specific activity the best within the choice range of that classroom( who can run fast, who likes to listen to others and the like). Only one person can be nominated for each skill. The skills are similar to those contained in the self-competency scales with the exception that there are items relating to reticence and disruptiveness. The final method is the teacher input. This consists of 62 adjectives which are distributed into areas relating to stable and unstable extroversion and stable and unstable introversion. Teachers check only those adjectives that appear typically characteristic of the child.

In addition to the methods, there are a number of common traits distributed throughout the instrument. Interviews with children indicated that skills, competencies, and patterns of liking or not-liking appear functionally similar to Holland's psycho-vocational dimensions ( Holland, 1966). Holland enunciated a theory of vocational choice that is based on a pattern of nurturance, initially within the family, and later in conjunction with the environmental press. He identified families of occupations that related to artistic, intellectual, social, conventional, realistic-outdoor, and enterprising characteristics.

After a process of initial experimentation, self and group scales were included in the BCCI that reflect: (1) the artistic-intellectual dimension, (2) the social-conventional dimension, (3) the realistic-outdoor-masculinity dimension, and (4) the enterprising area. In addition, items composing a reticence and disruptiveness set of scales were included. The vocational-awareness scales also reflect these same areas. Teacher judgments by adjectives tend to distribute themselves into gradations of extroversion and introversion, stable and unstable behavior. They follow a distribution which is typical as reported by Eysenck and Rachman in their studies (1965). Finally, there are a number of reinforcer-type activities that have been grouped into seven scales, and a measure of satisfaction with the classroom climate. The reinforcer scales are: (1) interests in self-stimulating activities, (2) interests in esthetic activities, (3) interests in task-oriented activities, (4) interests in family activities, (5) interests in conventional activities, (6) interests in male peer activities, and (7) interests in female peer activities. In all there are 32 short scales that are independent of each other plus some summary and total scale scores.

Through the use of principal axis factor analysis and multi-method multi-trait factor analysis as described by Jackson (1969) it has been possible to group together various scales by factors. There is repeated evidence that self-report, group nominations and teacher judgments converge on basic factors such as affiliation, aggression, seclusiveness and the like (Barclay and Elton, 1973, Tapp and Barclay, 1973).

On the basis of a number of experimental and observational studies, including all the traditional reliability and validity studies together with behavioral observations (Barclay, 1972), it has been possible to develop both an individual computer written report and several scattergram grids and tables for use by school personnel. The programming problems are formidable and work on this aspect of the inventory has proceeded for seven years with continual modifications. Basically, there are two kinds of interpretations required for the programming. The first relates to the individual report. Here judgments about individual scales are made in terms of the standard deviation of the scale with a judgment of high reflected at or about the one standard deviation above the mean, and a judgment of low reflected at or about one standard deviation below the mean. The second kind of judgment is found in the summary paragraph about the child and consists of a series of conditional "if" statements in the computer that searches for the convergence or discriminant judgment of various scales that are known to fit together through correlational and factor analysis studies.

On the basis of these inferences two tables have been constructed that are printed in the computer report for each class. The first of these reduces the 32 independent scales to 15 personalogical variables that reflect the convergence of self, group and teacher judgments. By searching for combinations of scale values based on factor scores, but not identical to them, the computer makes a judgment as to whether a given individual is "high" or "low" on this variable. If he is not "high" or "low" it leaves the space blank. This table then provides a quick summary of the characteristics of the individual as related to

the multiple inputs. It becomes a kind of summary of environmental traits, abstractions that reflect the contextual setting of the child in that specific environment.

The second table is generated from both the individual report and table 1. It takes the inference process still further by making a set of judgments as to what are the implications of both individual and peer-teacher expectations. In this table there are eight suspected problem areas. These are areas in which there is a probable suspected problem. These eight areas are: (1) self-concept, (2) group skills, (3) self-control skills, (4) verbal skills, (5) physical skills, (6) vocational development, (7) cognitive-motivation development, and (8) attitude towards school.<sup>2</sup> If conditions are met, an asterisk is placed after the number of the appropriate child and in the proper column. Then the number of asterisks are divided by the number of boys and a proportion of problems in that category for boys in that class obtained. The same procedure is done for the girls and for the class as a whole. Thus, by looking at table 2 in the summary printout it is possible to ascertain both the individuals who need help in suspected areas and the proportion of such problems within that specific classroom for boys and girls.

On the following pages illustrations of these tables and reports are found. Figure 1 is an example of the individual report on boy # 18 in a sixth grade class. Figure 2 is the grid obtained of total self and total group nominations. Here we can see his position in the lower left area. Figure 3 illustrates the personological variables for the class, and Figure 4 the array of problems.

STUDENT NUMBER 18 IS A BOY IN THE 6 GRADE.

THE FOLLOWING ARE IMPRESSIONS OF HIS SELF-COMPETENCY SKILLS:

LOW GLOBAL ESTIMATE OF SELF-COMPETENCY SKILLS. LOW SELF-ESTIMATE OF ARTISTIC-INTELLECTUAL SKILLS. ABOVE AVERAGE SELF-ESTIMATE OF REALISTIC-MASCULINE SKILLS. LOW SELF-ESTIMATE OF SOCIAL SKILLS. AVERAGE SELF-ESTIMATE OF ENTERPRISING SKILLS.

THE FOLLOWING ARE IMPRESSIONS OF HIS KNOWLEDGE OF THE FIELD OF WORK, AS A FUNCTION OF ACQUAINTANCE WITH THE ENVIRONMENT:

APPEARS TO EXPRESS AN AVERAGE AWARENESS OF VOCATIONAL ALTERNATIVES IN THE FIELD OF WORK. SHOWS LITTLE OR NO INTEREST IN MANUAL AND OUTDOOR OCCUPATIONS. SHOWS LITTLE OR NO INTEREST IN SCIENTIFIC, TECHNICAL, AND INTELLECTUAL-ORIENTED OCCUPATIONS. SHOWS LITTLE OR NO INTEREST IN SOCIAL OCCUPATIONS CALLING FOR INTERPERSONAL SKILLS. SHOWS AVERAGE INTEREST IN ARTISTIC AND CREATIVE OCCUPATIONS.

THE FOLLOWING ARE IMPRESSIONS OF HIS PERSONAL AND INTERPERSONAL SKILLS AS JUDGED BY PEERS:

PERCEIVED GLOBALLY BY PEERS AS POSSESSING FEW PERSONAL OR SOCIAL SKILLS. PERCEIVED BY PEERS AS POSSESSING SOME ARTISTIC AND INTELLECTUAL SKILLS. PERCEIVED BY PEERS AS LACKING REALISTIC AND MASCULINE SKILLS. PERCEIVED BY PEERS AS POSSESSING SOME SOCIAL COMPETENCIES AND SKILLS. NOT PERCEIVED BY PEERS AS MANIPULATORY OR POSSESSING INTERPERSONAL LEADERSHIP SKILLS. PERCEIVED BY PEERS AS BEING SOMEWHAT RETICENT, SHY, AND WITHDRAWN. IS NOT PERCEIVED BY PEERS AS DISRUPTIVE WITHIN THE CLASSROOM.

THE FOLLOWING ARE IMPRESSIONS OF HIS PERSONAL AND SOCIAL ADJUSTMENT AND EFFORT AND MOTIVATION AS RATED BY THE TEACHER:

MANIFESTS SOMEWHAT INCONSISTENT PATTERN OF PERSONAL ADJUSTMENT. MANIFESTS OCCASIONAL POOR SOCIAL ADJUSTMENT. MANIFESTS OCCASIONAL POOR EFFORT AND MOTIVATION.

#### SUMMARY:

THIS BOY IS IN GREAT NEED OF HELP IN THE DEVELOPMENT OF PERSONAL AND INTERPERSONAL SKILLS. THIS BOY'S BEHAVIOR BASED ON SELF, PEER AND TEACHER JUDGMENTS DOES NOT APPEAR TO BE VIEWED CONSISTENTLY AS EITHER EXTROVERTED OR INTROVERTED, CONTROLLED OR IMPULSIVE. HE APPEARS TO MANIFEST A BLEND OF TEMPERAMENT AND RESPONSE MODES.

THIS CHILD SHOWS HIGH INTERESTS IN PEER GROUP MALE REINFORCERS AVERAGE INTERESTS IN SELF-STIMULATING, ESTHETIC, TASK-ORIENTED, FAMILIAL, CONVENTIONAL, PEER GROUP FEMALE REINFORCERS AND LITTLE OR NO INTEREST IN THE REMAINING REINFORCERS.

THIS CHILD'S JUDGMENT OF THE SCHOOL ENVIRONMENT IS SOMEWHAT UNFAVORABLE.

#### STUDENT NUMBER 18 CLASSIFICATION CODE (B5)

| SELF-RATED SCALES |    |      |    | GROUP NOMINATION SCALES |    |      |    | VOCATIONAL PREFERENCE SCALES |    |      |    | TEACHER ADJECTIVE SCALES |    |      |   | BEHAVIORAL SCALES |     |     |    |     |    |     |     |
|-------------------|----|------|----|-------------------------|----|------|----|------------------------------|----|------|----|--------------------------|----|------|---|-------------------|-----|-----|----|-----|----|-----|-----|
| SAI               | 0- |      |    | GAI                     | 2  | GR   | 1  | REAL                         | 0- | ENTR | 0  | ST                       | 2  | PA+  | 0 | SAO               | 7   | MEL | 6* | SSR | 13 | CNV | 17  |
| SRM               | 4  |      |    | GRM                     | 1- | GD   | 2- | INT                          | 0- | ARTS | 0  |                          |    | SA+  | 0 | EFFO              | 6   | CHL | 5* | ESR | 14 | PRM | 33* |
| SSC               | 1- |      |    | GSC                     | 2  |      |    | SOC                          | 0- | CONT | 8* |                          |    | EFF+ | 0 | TR7               | 0-  | PHL | 0  | ITR | 15 | PRF | 19  |
| SE                | 4  | STOT | 9- | GE                      | 1- | GTOT | 6- | CNV                          | 0- | MF   | 7* | VTOT                     | 17 | PAO  | 6 | TR8               | 19* | SAN | 0  | FRR | 18 | CCI | 7-  |

COMPARISON OF MALE STUDENTS: SELF-CONCEPT SKILLS VS. GROUP NOMINATIONS  
MALES

| SELF TOTALS       |           |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
|-------------------|-----------|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|
| PERCENTILES       | RAW SCORE |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| 99                | 23        |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| 98                | 22        |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| 96                | 21        |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| 93                | 20        |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| 88                | 19        |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| 80                | 18        |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| 70                | 17        |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| 61                | 16        |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| 48                | 15        |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| 35                | 14        |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| 25                | 13        |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| 16                | 12        |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| 9                 | 11        |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| 5                 | 10        |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| 2                 | 9         |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| 1                 | 0         |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| GROUP NOM. TOTALS |           | 1 | 4 | 8 | 12 | 15 | 19 | 24 | 28 | 34 | 39 | 45 | 49 | 53 | 56 | 59 | 62 | 65 | 68 | 69 | 72 | 76 | 82 | 88 | 96 | 99 |  |
| PERCENTILES       |           | 0 | 2 | 3 | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 26 | 31 | 36 | 67 |  |
| RAW SCORES        |           |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |

Figure 3  
Illustration of Summary Table No. 1

EXPLANATION OF SUMMARY TABLE NO. 1

THE FOLLOWING SUMMARY TABLE IDENTIFIES HIGH AND LOW SCORES AS RELATED TO THE BASIC FACTOR STRUCTURE OF THE BCCI.  
(SEE USER'S MANUAL PP. 21-23)

| SUMMARY OF PERSONALITY INDICES |           |            |          |          |           |          |          |          |          |            |           |           |           |           |           |
|--------------------------------|-----------|------------|----------|----------|-----------|----------|----------|----------|----------|------------|-----------|-----------|-----------|-----------|-----------|
| STUDENT<br>AND SEX             | 1<br>SELF | 2<br>GROUP | 3<br>DOM | 4<br>AGG | 5<br>SECL | 6<br>PHY | 7<br>VOC | 8<br>AFF | 9<br>INT | 10<br>INST | 11<br>CNV | 12<br>ITR | 13<br>FAM | 14<br>SSR | 15<br>CCI |
| 1/M                            |           |            |          |          | LO        |          | LO       | HI       | LO       | LO         |           |           |           |           |           |
| 2/F                            | LO        |            | LO       |          | LO        |          |          |          | LO       |            |           | LO        | HI        | LO        |           |
| 3/F                            | LO        |            |          |          |           | LO       |          |          |          | LO         |           |           | HI        | HI        |           |
| 4/F                            |           | HI         |          |          | HI        |          |          | HI       | HI       | LO         |           | HI        | HI        |           | HI        |
| 5/M                            |           |            |          |          |           | HI       |          |          | LO       | LO         | HI        |           |           | LO        | LO        |
| 6/M                            |           | HI         | HI       |          |           |          | LO       |          |          |            |           |           | HI        |           |           |
| 7/F                            | LO        |            | LO       |          | LO        | LO       |          | HI       | LO       | LO         |           |           |           |           |           |
| 8/M                            |           |            |          |          |           |          | HI       |          | LO       | LO         | LO        |           | HI        |           |           |
| 9/F                            | LO        | LO         | LO       |          |           | LO       |          |          | LO       |            |           |           | HI        | LO        |           |
| 10/F                           |           |            |          |          |           |          |          |          |          | LO         |           |           | HI        |           |           |
| 11/F                           |           | LO         |          |          | HI        |          | HI       |          |          | HI         | LO        |           |           |           | LO        |
| 12/M                           | LO        |            |          |          |           | HI       | HI       |          |          | HI         |           |           |           |           | LO        |
| 13/F                           | LO        |            |          |          |           | LO       |          |          |          | LO         | HI        |           |           | LO        |           |
| 14/F                           |           | HI         |          |          |           |          | LO       | HI       | HI       |            |           |           | HI        |           |           |
| 15/M                           | HI        | HI         | HI       |          |           |          | HI       | HI       |          | LO         |           | HI        | HI        | HI        |           |
| 16/F                           | LO        |            | LO       | LO       |           | LO       |          |          |          |            |           | LO        |           | LO        | LO        |
| 17/M                           |           | HI         | HI       |          |           |          | HI       | HI       | HI       | LO         | LO        | HI        |           |           |           |
| 18/M                           | LO        | LO         | LO       |          | HI        |          | LO       |          | LO       | HI         |           |           |           |           | LO        |
| 19/F                           |           | HI         |          |          |           |          |          |          |          | LO         |           |           | HI        |           |           |
| 20/F                           |           |            |          |          |           | LO       |          |          |          | LO         |           |           | HI        |           |           |
| 21/F                           | LO        | HI         |          |          |           |          |          | HI       |          | LO         |           |           | HI        | HI        |           |
| 22/M                           | LO        | LO         |          |          | HI        |          | HI       | LO       | LO       | HI         |           | HI        | HI        | HI        | LO        |
| 23/F                           |           | HI         | HI       |          |           |          |          | HI       |          | LO         |           |           | HI        | HI        | HI        |
| 24/M                           |           |            |          | HI       |           |          | HI       |          |          | HI         | HI        |           |           | LO        |           |
| 25/F                           |           |            |          |          |           |          |          |          |          | LO         | LO        | LO        |           |           |           |
| 26/M                           | LO        |            |          |          | HI        |          | HI       |          |          | HI         |           | LO        |           | LO        | LO        |

LIST OF ABBREVIATIONS FOR SUMMARY TABLE NO. 1

| SUMMARY OF PERSONALITY INDICES |                            |          |                                           |
|--------------------------------|----------------------------|----------|-------------------------------------------|
| 1 SELF:                        | SELF-COMPETENCY SKILLS     | 2 GROUP: | GROUP SOCIAL INTERACTION                  |
| 3 DOM:                         | DOMINANCE                  | 4 AGG:   | AGGRESSION                                |
| 5 SECL:                        | SECLUSION                  | 6 PHY:   | PHYSICAL SKILLS                           |
| 7 VOC:                         | VOCATIONAL ASPIRATIONS     | 8 AFF:   | AFFILIATION                               |
| 9 INT:                         | INTELLECTUAL SKILLS        | 10 INST: | INSTABILITY                               |
| 11 CNV:                        | CONVENTIONAL REINFORCERS   | 12 ITR:  | INTELLECTUAL-TASK-ORIENTATION REINFORCERS |
| 13 FAM:                        | FAMILY REINFORCERS         | 14 SSR:  | SELF-STIMULATING INTERESTS                |
| 15 CCI:                        | CLASSROOM CLIMATE ATTITUDE |          |                                           |

**EXPLANATION OF SUMMARY TABLE NO. 2**

IN THIS TABLE THERE ARE EIGHT SUSPECTED PROBLEM AREAS. THESE AREAS ARE DERIVED FROM THE TOTAL PATTERN OF SCORES OBTAINED ON THE INDIVIDUAL STUDENT. THE NUMBER AND PERCENTAGE OF CHILDREN WITH PROBLEMS IN CERTAIN AREAS ARE INDICATED BELOW THE TABLE

**POSSIBLE TARGET AREAS FOR PROBLEM INTERVENTIONS**

| STUDENT<br>AND SEX | SELF<br>CONCEPT | GROUP<br>SKILLS | SELF-CONTROL<br>SKILLS | VERBAL<br>SKILLS | PHYSICAL<br>SKILLS | VOCATIONAL<br>DEVELOPMENT | COGNITIVE<br>DEVELOPMENT | ATTITUDE<br>TOWARD SCHOOL |
|--------------------|-----------------|-----------------|------------------------|------------------|--------------------|---------------------------|--------------------------|---------------------------|
| 1/M                |                 |                 |                        |                  |                    | *                         |                          |                           |
| 2/F                | *               |                 |                        |                  |                    |                           | *                        |                           |
| 3/F                | *               |                 |                        |                  | *                  |                           |                          |                           |
| 4/F                |                 |                 | *                      |                  |                    |                           |                          |                           |
| 5/M                |                 |                 |                        |                  |                    |                           | *                        | *                         |
| 6/M                |                 |                 |                        |                  |                    | *                         |                          |                           |
| 7/F                | *               |                 |                        |                  | *                  |                           |                          |                           |
| 8/M                |                 |                 |                        |                  | *                  |                           |                          |                           |
| 9/F                | *               | *               |                        |                  | *                  |                           | *                        |                           |
| 10/F               |                 |                 |                        |                  |                    |                           |                          |                           |
| 11/F               |                 | *               |                        | *                |                    |                           |                          | *                         |
| 12/M               | *               |                 |                        |                  |                    |                           |                          | *                         |
| 13/F               | *               |                 |                        |                  | *                  |                           |                          | *                         |
| 14/F               |                 |                 |                        |                  |                    | *                         |                          |                           |
| 15/M               |                 |                 |                        |                  |                    |                           |                          |                           |
| 16/F               | *               |                 |                        |                  | *                  | *                         |                          | *                         |
| 17/M               |                 |                 |                        |                  |                    |                           |                          |                           |
| 18/M               | *               | *               |                        | *                |                    | *                         |                          | *                         |
| 19/F               |                 |                 |                        |                  |                    |                           |                          |                           |
| 20/F               |                 |                 |                        |                  | *                  |                           |                          |                           |
| 21/F               | *               |                 |                        | *                |                    |                           |                          | *                         |
| 22/M               | *               | *               |                        | *                |                    |                           |                          | *                         |
| 23/F               |                 |                 |                        |                  |                    |                           |                          |                           |
| 24/M               |                 |                 | *                      |                  |                    |                           |                          |                           |
| 25/F               |                 |                 |                        |                  |                    |                           |                          |                           |
| 26/M               | *               |                 |                        | *                |                    |                           |                          | *                         |

SEE PROFILE ANALYSES OF BCGI CLASSIFICATIONS IN USER'S MANUAL PP. 59-108 AND SUMMARY OF STUDENT TARGET SKILLS AND ALTERNATE STRATEGIES P. 111.

|       |     |     |    |     |     |     |     |     |
|-------|-----|-----|----|-----|-----|-----|-----|-----|
| MALES | 4.  | 2.  | 1. | 3.  | 0.  | 3.  | 1.  | 5.  |
| PCT   | 36. | 18. | 9. | 27. | 0.  | 27. | 9.  | 45. |
| FEM.  | 7.  | 2.  | 0. | 2.  | 6.  | 2.  | 2.  | 2.  |
| PCT   | 47. | 13. | 0. | 13. | 40. | 13. | 13. | 13. |
| GROUP | 11. | 4.  | 1. | 5.  | 6.  | 5.  | 3.  | 7.  |
| PCT   | 47. | 15. | 4. | 19. | 21. | 19. | 12. | 27. |

Thus the BCCI provides information about the individual student on several levels. It presents an individual report reflecting differences in the individual scales and summarizing temperament and self versus peer group determinants, then consolidates these scales into a series of personological and environmental judgments, and finally draws some conclusions about suspected problems. What is obtained is the consequence of many multiple observations by the child himself, all of his class peer group, and the teacher.

The BCCI has been administered to approximately 12,000 children in eight states. These children were found in central city schools, suburban, and rural communities. Basic standardization studies were completed with approximately 3400 children.

#### Method

This study is based on the use of the eight problem categories together with a summary analysis of teacher ratings. Over 4000 elementary school children distributed from the 2nd through the 6th grades were represented in 143 classrooms. The unit of measurement then was the summary set of proportions of problems for each classroom unit separately arrived at for males and for females. The population was drawn from three communities that are quite different. District A represented a university town in the deep South. District B represented a suburban area of a Northern large city, and District C represented the inner city schools of a large central Southern school district.

Three problems were posed relating to this study: (1) what are the characteristics of classroom groups described cross-sectionally by grade and sex determinants ? (2) What can be learned through a comparison of districts by problems ? (3) What can be learned through intra-district comparisons. A number of statistical procedures were used to ascertain answers to these questions. First of all a multivariate analysis of the data using race, grade and sex as factors was obtained. This multivariate analysis was based on a computer program designed by Dr. Jeremy Finn of the University of New York at Buffalo. Differences associated with race, grade and sex were looked at on all of the problems variables. This provided both the statistical comparisons desired and data for plotting differences.

Second, a principal factor analysis was completed on the eight problems variables and the three summary teacher ratios (these ratios reflect the sum of positive and sum of negative adjectives chosen by each teacher for each child).<sup>3</sup> Third, using a discriminant analysis program by district it was possible to look at differences between school districts. Fourth, using the data obtained discriminant analysis was used to determine differences within a school district as an example of how this procedure can be used for policy planning.

In summary then, the procedures mentioned above were used to: (1) identify cross-sectional differences on grade, sex, and race variables, (2) ascertain differences in problem factors between three school districts, and (3) illustrate differences within one school district.

## Results

The results of this study will be reported in three sections. The first section will be concerned with cross-sectional differences by age, sex, and race for the problems proportions. The second section will deal with differences between school districts, and the third section will be concerned with differences within one school district.

### 1. Cross-Sectional Differences

The multivariate analysis of the problems and teacher judgments provide some interesting information about the relationship between proportions of problems. The intercorrelations for the males may be summarized as follows:

1. Self-concept problems appear to be related significantly to cognitive-motivation problems and dislike of school.
2. Group interaction problems tend to be related positively to verbal skill deficits and cognitive-motivation problems.
3. Verbal skill deficits are related to group interaction, self-management, cognitive-motivation and poor attitude towards school problems. They are also related significantly to positive ratings by teachers in the personal adjustment, social adjustment, and effort and motivation areas. This suggests that verbal skill deficits in males are related to positive teacher evaluations.
4. Self-control problems are positively related to verbal skill deficits and negative teacher evaluations.
5. Physical skill problems appear to be related to group interaction problems and poor attitude towards school.
6. Vocational deficits tend to be related to self-concept deficits, cognitive-motivation problems and poor attitude towards school.
7. Cognitive-motivation problems tend to be related to self-concept problems, poor group interaction skills, poor verbal skills, poor knowledge of the world of work and low teacher judgments.
8. Poor attitude towards school is reflected in a lowered self-concept, poor verbal skills, poor physical skills, lack of knowledge about vocational alternatives and low teacher expectations.

Table 1 Means, Standard Deviations  
and Intercorrelations for Suspected Problems (Males)

| Problem Area                  | Mean  | S.D.  | 2  | 3   | 4          | 5          | 6          | 7          | 8          | 9          | 10         | 11         |
|-------------------------------|-------|-------|----|-----|------------|------------|------------|------------|------------|------------|------------|------------|
| 1. Self Concept               | 27.16 | 16.41 | 12 | .07 | -.07       | 10         | <u>.16</u> | <u>.18</u> | <u>.22</u> | -.13       | -.10       | -.11       |
| 2. Group Inter-<br>action     | 19.05 | 11.79 |    | .02 | <u>.17</u> | <u>.20</u> | .05        | <u>.18</u> | -.07       | .01        | .06        | .01        |
| 3. Self Manage-<br>ment       | 14.52 | 14.14 |    |     | <u>.27</u> | -.13       | -.21       | .09        | .01        | -.21       | -.20       | -.24       |
| 4. Verbal Skills              | 13.86 | 11.66 |    |     |            | 19         | .02        | <u>.20</u> | <u>.29</u> | <u>.31</u> | <u>.33</u> | <u>.39</u> |
| 5. Physical<br>Skills         | 1.34  | 3.01  |    |     |            |            | .15        | .05        | <u>.25</u> | -.01       | -.08       | -.03       |
| 6. Vocational<br>Skills       | 15.90 | 14.78 |    |     |            |            |            | <u>.16</u> | <u>.26</u> | -.07       | -.13       | -.07       |
| 7. Cognitive<br>Skills        | 10.80 | 10.30 |    |     |            |            |            |            | .16        | -.28       | -.23       | -.25       |
| 8. Attitude<br>Towards School | 21.41 | 13.99 |    |     |            |            |            |            |            | -.19       | -.26       | -.31       |
| 9. Teacher P.A.               | .16   | .26   |    |     |            |            |            |            |            |            | <u>.94</u> | <u>.89</u> |
| 10. Teacher S.A.              | .19   | .27   |    |     |            |            |            |            |            |            |            | <u>.85</u> |
| 11. Teacher E.F.              | -.03  | .22   |    |     |            |            |            |            |            |            |            |            |

N = 143 Elementary Classroom Means P .01 = .208, .05 = .159

Note: Decimals omitted and significant correlations underlined.

- 14 -

Turning now to the second table relating to the girls the intercorrelations may be summarized as follows:

1. Self-concept problems are positively related to verbal, physical, cognitive-motivation and poor attitude towards school deficits. They are also related to lowered mean evaluations by teachers.
2. Group interaction problems are related positively to verbal, physical, vocational, cognitive and attitudinal deficits.
3. Self-management deficits are related to verbal and cognitive deficits, as well as to negative evaluations on personal adjustment by teachers.
4. Verbal deficits tend to be related to almost all other problems.
5. Physical skill and attitudinal deficits are related significantly to almost all other problems.
6. Vocational problems are related to group interaction deficits.

A further clarification of the relationship between the problem areas and teacher judgments can be observed in the results of a principal axis factor analysis completed separately for males and females. These data are reported in tables 3 and 4. As can be seen from Table 3, 30 percent of the total variance is accounted for by the summary teacher judgments. Self-management and verbal skill deficits define the second factor. This might suggest that verbal mediation skills and the lack thereof play an important role in the manifestation of uncontrolled and impulsive behavior. Factor 3 is a combination of poor group interaction and poor attitude towards school. This is a logical if not causal relationship. Physical skill deficits, poor attitude towards school and verbal deficits define the fourth factor with self-concept problems standing alone as the fifth factor. Finally, the sixth factor appears to be a combination of vocational and cognitive-motivation deficits.

Table 2 Means, Standard Deviations  
and Intercorrelations for Suspected Problems (Females)

| Problem Area              | Mean  | S.D.  | 2  | 3   | 4         | 5         | 6         | 7         | 8         | 9          | 10         | 11         |
|---------------------------|-------|-------|----|-----|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|
| 1. Self Concept           | 24.48 | 15.41 | 13 | -15 | <u>24</u> | <u>45</u> | 13        | <u>28</u> | <u>43</u> | <u>-19</u> | <u>-21</u> | <u>-26</u> |
| 2. Group Interaction      | 15.20 | 11.18 |    | 13  | <u>33</u> | <u>32</u> | <u>19</u> | <u>33</u> | <u>27</u> | 13         | 09         | 14         |
| 3. Self Management        | 8.88  | 10.46 |    |     | <u>30</u> | -08       | 01        | <u>42</u> | 13        | <u>-22</u> | -04        | -10        |
| 4. Verbal Skill           | 19.44 | 12.00 |    |     |           | <u>16</u> | 04        | <u>26</u> | <u>23</u> | <u>-21</u> | <u>-17</u> | <u>-22</u> |
| 5. Physical Skill         | 12.27 | 10.87 |    |     |           |           | 14        | <u>22</u> | <u>22</u> | <u>-25</u> | <u>-20</u> | <u>-28</u> |
| 6. Vocational Skills      | 10.45 | 12.19 |    |     |           |           |           | 14        | 09        | -09        | -06        | -12        |
| 7. Cognitive Skills       | 10.42 | 10.78 |    |     |           |           |           |           | <u>36</u> | <u>-26</u> | -15        | <u>-20</u> |
| 8. Attitude toward School | 21.79 | 15.24 |    |     |           |           |           |           |           | <u>-28</u> | <u>-24</u> | <u>-30</u> |
| 9. Teacher P.A.           | .35   | .27   |    |     |           |           |           |           |           |            | <u>90</u>  | <u>89</u>  |
| 10. Teacher S.A.          | .40   | .25   |    |     |           |           |           |           |           |            |            | <u>84</u>  |
| 11. Teacher E.F.          | .21   | .20   |    |     |           |           |           |           |           |            |            |            |

N = 143 Elementary Classroom Means P .01 = .208, .05 = .159  
Note: decimals omitted and significant correlations underlined.

Table 3

Principal Factor Analysis (Varimax Rotation)  
Proportion of Suspected Problems (Males)

| Factor I            |      | Factor II           |      | Factor III          |      |      |
|---------------------|------|---------------------|------|---------------------|------|------|
| Teacher Rating P.A. | .97  | Self-Management     | .81  | Group Inter-        | .87  |      |
| Teacher Rating S.A. | .95  | Deficits            |      | action              |      |      |
| Teacher Rating E.F. | .91  | Verbal Skill        | .64  | Attitude towards    |      |      |
|                     |      | Deficits            |      | School              | .44  |      |
| 30.45 % of Variance |      | 15.07 % of Variance |      | 11.36 % of Variance |      |      |
|                     |      | 45.53 Cum. %        |      | 56.89 Cum. %        |      |      |
|                     |      |                     |      |                     |      |      |
| Factor IV           |      | Factor V            |      | Factor VI           |      |      |
| Physical Skill      | .84  | Self Concept        | .97  | Vocational Skill    | .78  |      |
| Deficits            |      | Deficits            |      | Deficits            |      |      |
| Attitude Towards    |      |                     |      | Cognitive Skill     |      |      |
| School              | .53  |                     |      | Deficits            | .66  |      |
| Verbal Skill        |      |                     |      |                     |      |      |
| Deficits            | .42  |                     |      |                     |      |      |
| 9.33 % of Variance  |      | 8.32 % of Variance  |      | 7.45 % of Variance  |      |      |
| 62.22 Cum. %        |      | 74.54 Cum. %        |      | 81.98 Cum. %        |      |      |
|                     |      |                     |      |                     |      |      |
| Sum of Squares      | I    | II                  | III  | IV                  | V    | VI   |
| of Factors          | 2.86 | 1.35                | 1.13 | 1.35                | 1.06 | 1.23 |

Note: Data based on 143 elementary classrooms representing approximately 4000 cases.

Table 4

Principal Factor Analysis (Varimax Rotation)  
Proportion of Suspected Problems (Females)

| Factor I            |     | Factor II               |      | Factor III          |      |      |      |
|---------------------|-----|-------------------------|------|---------------------|------|------|------|
| Teacher Rating P.A. | .95 | Self-Concept Deficits   | .85  | Self Management     | .84  |      |      |
| Teacher Rating S.A. | .94 | Attitude Towards School | .73  | Deficits            |      |      |      |
| Teacher Rating E.F. | .92 |                         |      | Cognitive Deficits  | .73  |      |      |
| 32.68 % of Variance |     | 15.84 % of Variance     |      | 12.99 % of Variance |      |      |      |
|                     |     | 48.52 Cum. %            |      | 61.51 Cum. %        |      |      |      |
| Factor IV           |     | Factor V                |      | Factor VI           |      |      |      |
| Vocational Deficits | .98 | Group Interaction       | .78  | Verbal Deficits     | .92  |      |      |
| 8.89% of Variance   |     | Deficits                |      |                     |      |      |      |
| 70.39 Cum. %        |     | Physical Skill          |      |                     |      |      |      |
|                     |     | Deficits                | .75  |                     |      |      |      |
|                     |     | 7.71 % of Variance      |      | 6.56 % of Variance  |      |      |      |
|                     |     | 78.11 Cum. %            |      | 84.67 Cum. %        |      |      |      |
| Sum of Squares      |     | I                       | II   | III                 | IV   | V    | VI   |
| of Factors          |     | 2.77                    | 1.62 | 1.51                | 1.07 | 1.36 | 1.02 |

Note: Data based on 143 elementary classrooms representing approximately 4000 cases.

For girls the summary teacher judgments contribute something over 32 percent of the total variance for the first factor. Factor 2 is a combination of self-concept deficits and poor attitude towards school. Factor 3 is a combination of self-management deficits and cognitive-motivation deficits. Factor 4 stands alone as vocational deficits. Factor 5 is a combination of group interaction and physical skill deficits and factor 6 is verbal skill deficits alone.

What these data infer in regard to the explanation of the variance associated with mean classroom problems in the 143 classrooms constituting the data base for this study appears to be clear:

1. For both boys and girls in these classrooms the largest deficit variance is related to teacher expectations.
2. For both boys and girls verbal skill deficits and self-management deficits are tied together, and generally associated with the frequency of cognitive-motivation deficits.
3. Poor attitude or dissatisfaction with school is associated with a number of other problem areas and may be a byproduct of poor social interaction and lack of teacher support.

The next statistical operation was the multivariate analysis of the suspected problems using the original problems data and the obtained teacher ratios. The program first contrasted Blacks and Whites using the determinant of the predominant racial group in the classroom. Because the unit of data analysis was the classroom mean, classes having 60 percent or more Black students were classified as Black with the same logic for White classrooms. No significant multivariate F ratio was obtained for this contrast. Second, grade levels were contrasted. Here it was found that grades 2, 3, 5, and 6 showed significant multivariate F ratios when contrasted with the grand mean. Third, the two sexes were contrasted with very significant differences. Finally, race-sex

interactions were contrasted. A significant multivariate F ratio was obtained for the second and sixth grades.

The results of the multivariate analysis are more adequately viewed by inspecting graphs of the means of problem variables by race and by sex. These data, however, are cross-sectional.

Figure 5

Comparison of Proportion of Self-Competency Problems by Grade, Sex and Race

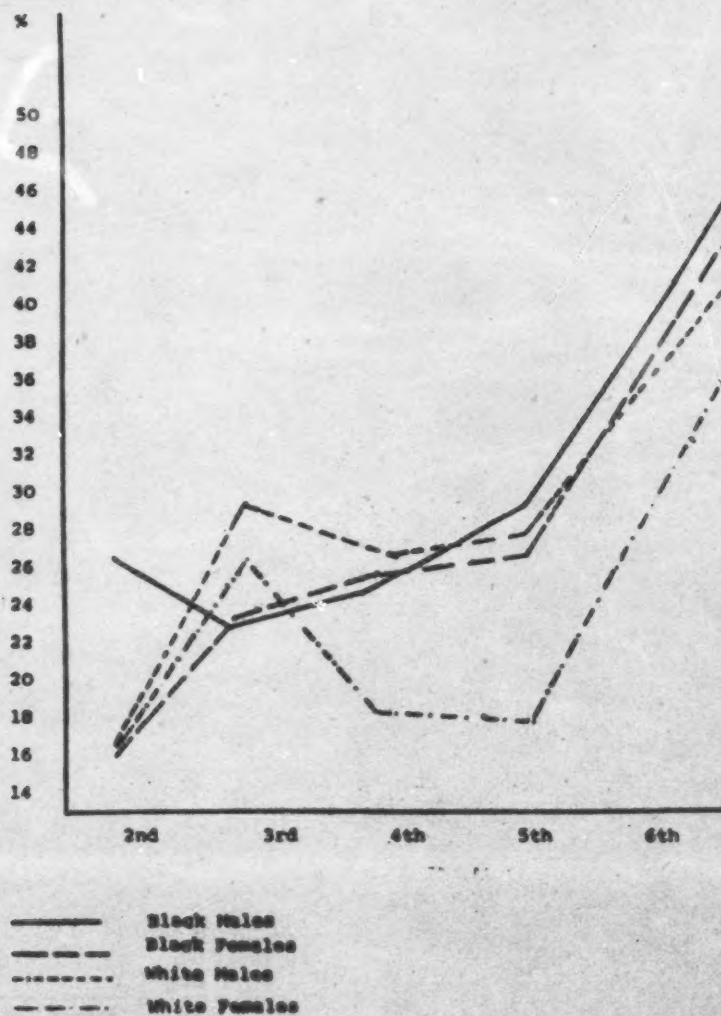


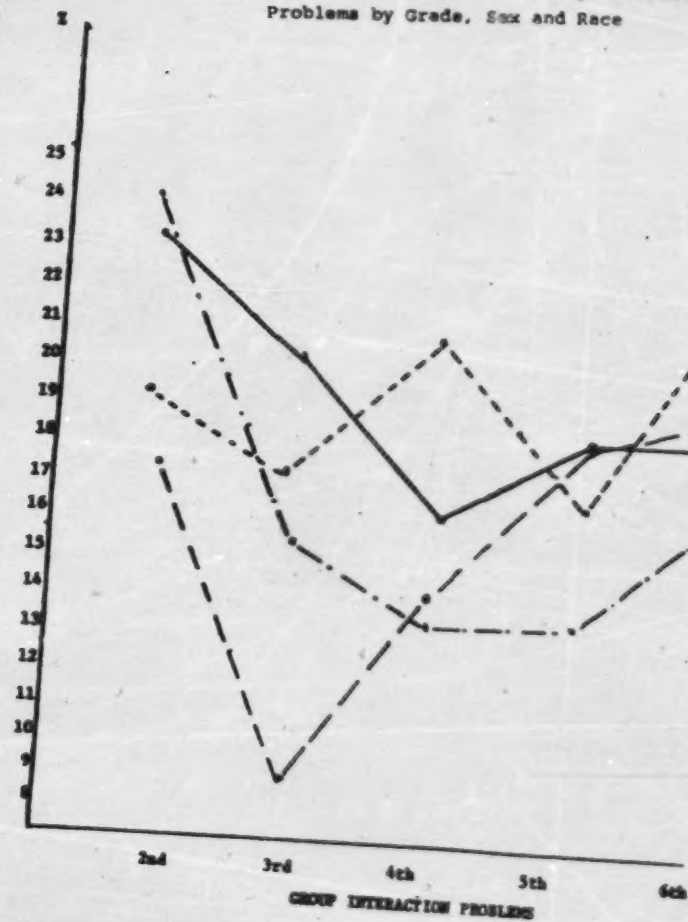
Figure 5 plots the mean percentage of self-competency problems for the four groups by grade level. It is apparent in this plot that second graders, with the exception of Black males tend to see themselves as more competent than at any other grade level. In general the level of self-competency deficits holds at about 25 percent during the third and fourth grades with a sharp rise in deficits for all groups noted by the sixth grade.

Figure 6 depicts the percentage of group interaction problems by grade, sex and race. Here it is evident that children in the second grade have a mean proportion of problems in group interaction that is higher. White males end up with the highest percentage of group interaction problems and White females tend to show a marked decline of these problems through the third, fourth, and fifth grades with a slight increase noted in the sixth grade.

Figure 7 compares the percentage of self-control or self-management problems by grade, sex and race. Here there appear to be some common racial trends. Black males and females both tend to show a peak in behavioral management problems in the fifth grade with a marked decline noted towards the sixth grade. Black males show the highest percentage of self-control problems over all groups and start out with the most problems in this area. Both White groups show a gradual decline to the fifth grade. White females show fewest problems in this area and reach a very real low in the fifth grade.

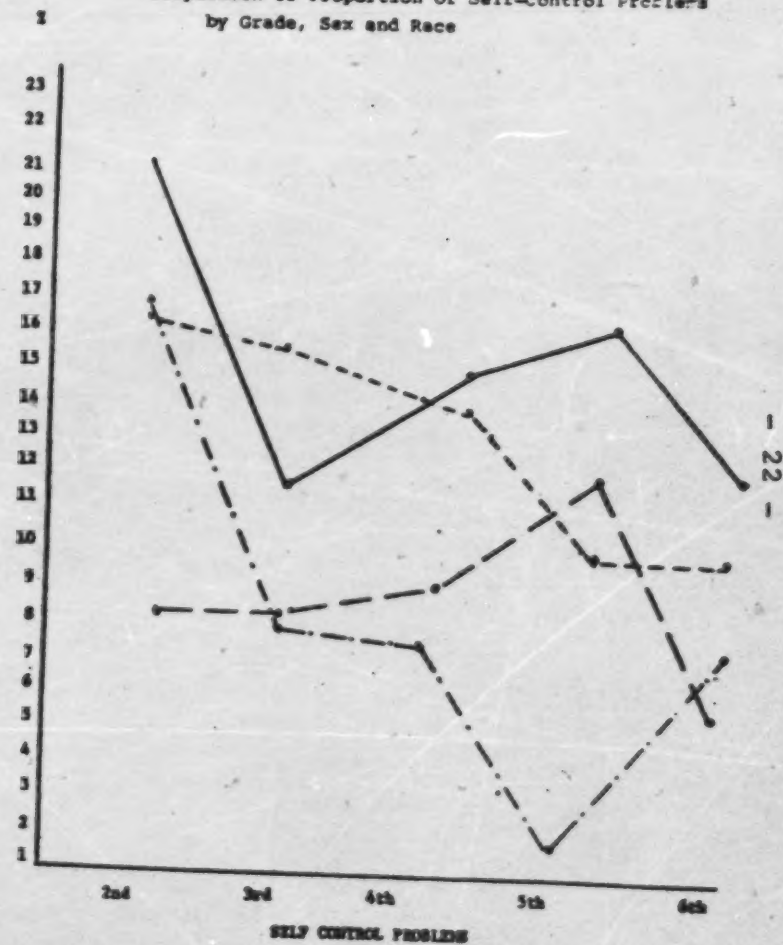
Figure 8 compares the percentage of verbal skill deficits by grade, sex and race. Here again there seems to be some kind of a trend characteristic of Whites and another one for Blacks.

Figure 6  
Comparison of Proportion of Group-Interaction Problems by Grade, Sex and Race



— BLACK MALES  
 --- BLACK FEMALES  
 ... WHITE MALES  
 -.- WHITE FEMALES

Figure 7  
Comparison of Proportion of Self-Control Problems by Grade, Sex and Race



— BLACK MALES  
 --- BLACK FEMALES  
 ... WHITE MALES  
 -.- WHITE FEMALES

Whites tend to show an increase in verbal skill deficits peaking in the fourth grade. This trend declines markedly in the fifth grade and increases sharply in the sixth grade. Blacks tend to start with higher verbal deficits than Whites. Black females tend to have the overall highest level of verbal deficits rising steadily from the third to the sixth grade where it reaches a mean proportion of almost 30 percent of the girls in Black classes.

Figure 9 represents percentage of physical skill deficits. This percentage represents peer and self-estimations of physical skills, outdoor manual and competitive activities. Very few boys show problems in this area. Girls by contrast tend to show a higher percentage of problems in this area.

Figure 10 compares the percentage of vocational development deficits by grade, sex and race. Results here may be the consequence of more discrimination by sixth graders regarding interest in vocations. This would lead to a decline in choices or a specific focus on one vocational area.

Figure 11 compares the percentage of cognitive-motivation deficits by grade, sex and race. This problem area reflects interest in intellectual-scientific and task-oriented activities. With the exception of the White females the trend is clearly towards more cognitive-motivation deficits from the second through the sixth grades. Here again, Black females show the highest percentage of problems in this area.

Figure 12 compares the percentage of poor attitudes towards school by grade, sex and race. The general trend in these data

Figure 8

Comparison of Proportion of Verbal Skill Deficits  
by Grade, Sex, and Race

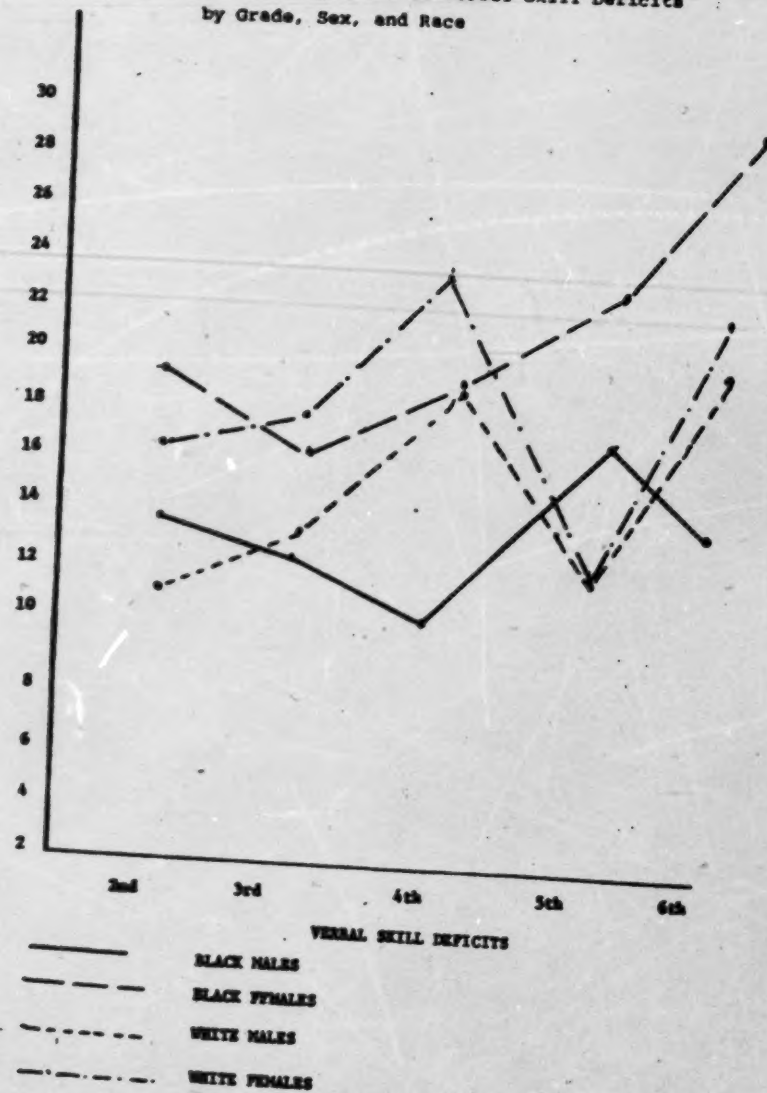


Figure 9

Comparison of Proportion of Physical Skill Deficit  
by Grade, Sex, and Race

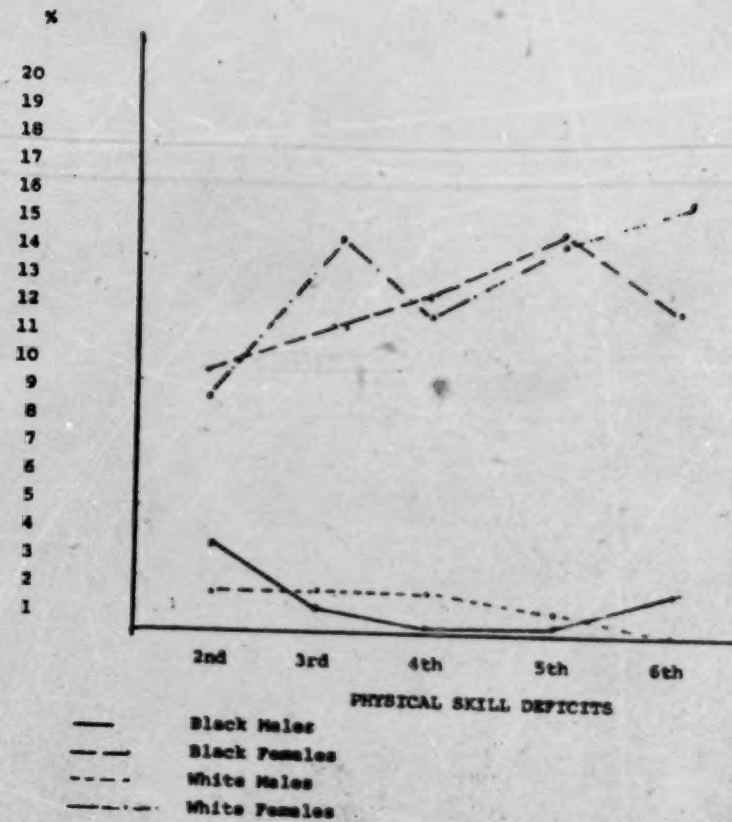
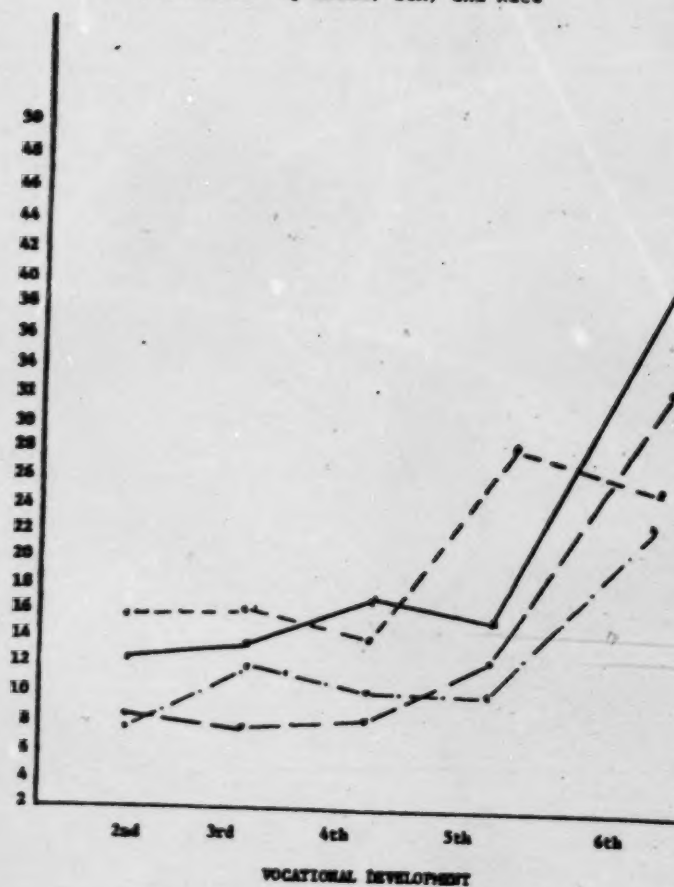


Figure 10.

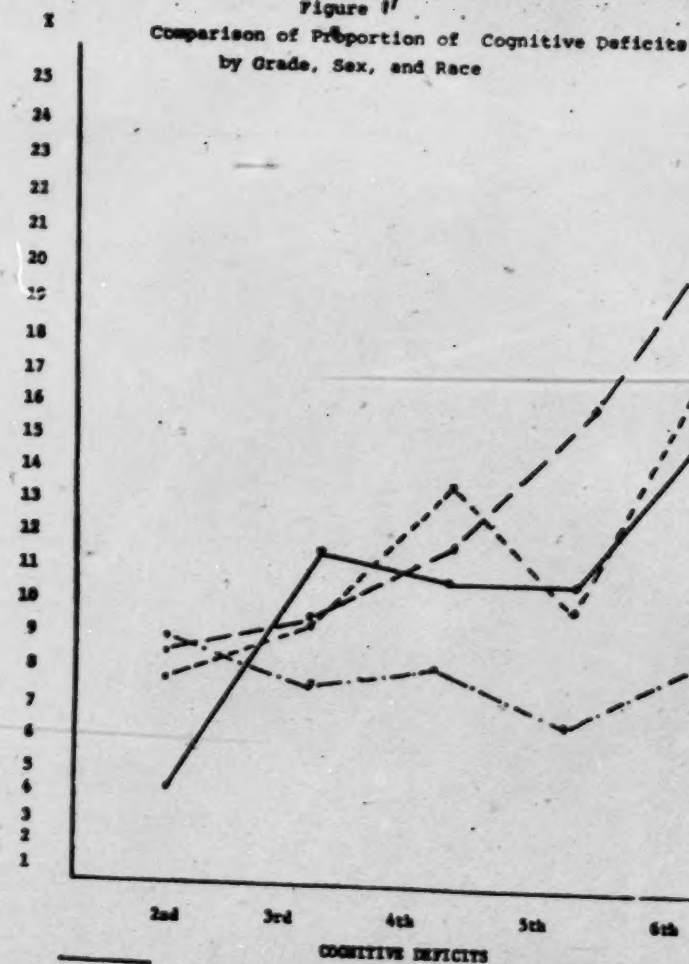
Comparison of Proportion of Vocational Development Deficits by Grade, Sex, and Race



— BLACK MALES  
 - - - BLACK FEMALES  
 - . - . WHITE MALES  
 - . - . WHITE FEMALES

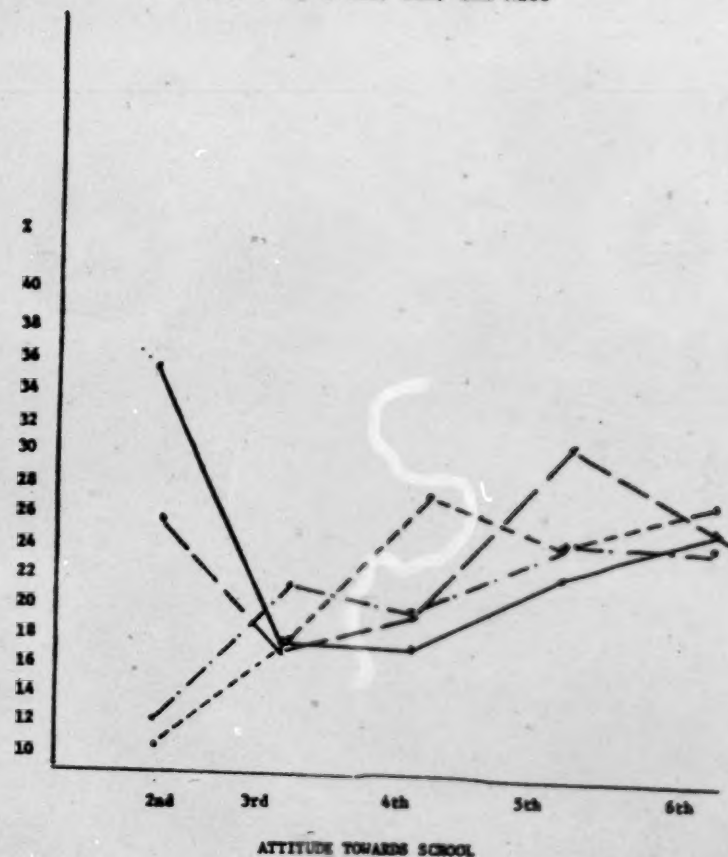
Figure 11

Comparison of Proportion of Cognitive Deficits by Grade, Sex, and Race



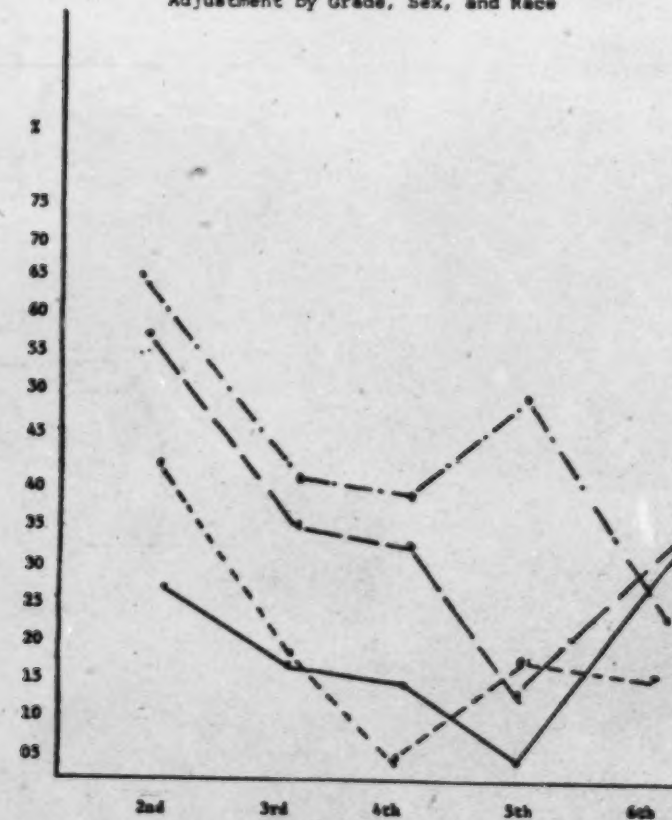
— BLACK MALES  
 - - - BLACK FEMALES  
 - . - . WHITE MALES  
 - . - . WHITE FEMALES

Figure 12.  
Comparison of Proportion of Poor Attitude Towards  
School by Grade, Sex, and Race



— BLACK MALES  
 - - - BLACK FEMALES  
 - - - WHITE MALES  
 - - - WHITE FEMALES

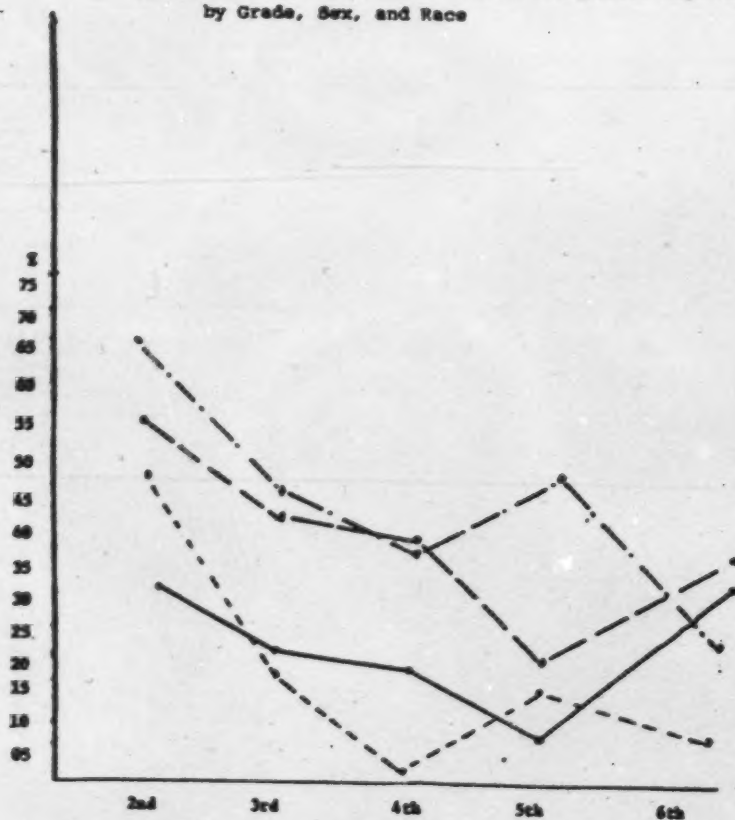
Figure 13.  
Comparison of Mean Teacher Ratios for Personal  
Adjustment by Grade, Sex, and Race



— BLACK MALES  
 - - - BLACK FEMALES  
 - - - WHITE MALES  
 - - - WHITE FEMALES

Figure 14

Comparison of Mean Teacher Ratios for Social Adjustment  
by Grade, Sex, and Race

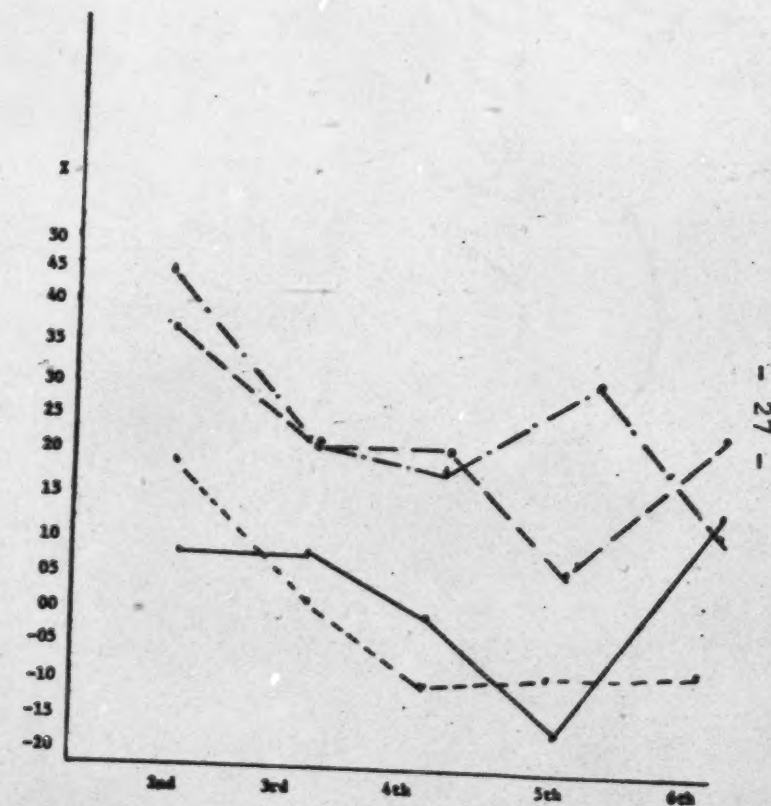


TEACHER RATING SOCIAL ADJUSTMENT

— BLACK MALES  
 - - - BLACK FEMALES  
 - - - WHITE MALES  
 - . - WHITE FEMALES

Figure 15

Comparison of Mean Teacher Ratios for Effort and Motivation  
by Grade, Sex, and Race



TEACHER RATING EFFORT AND MOTIVATION

— BLACK MALES  
 - - - BLACK FEMALES  
 - - - WHITE MALES  
 - . - WHITE FEMALES

is towards progressively more dissatisfaction with school over the grades. Of specific interest is the fact that Black children already in the second grade have rather well-defined poor attitudes towards school as compared with the generally favorable attitude manifested by Whites. Regardless, it appears from this figure that initial differences are smoothed out in the third grade and there is generally an increasing percentage of dissatisfaction with school.

Figures 13, 14, and 15 show the characteristic trends in mean teacher ratios by grade, sex and race. Here it should be noted that a high mean ratio represents a good set of evaluations with more positive adjectives chosen than negative ones. What is being graphed here is the mean proportion of positive adjectives chosen over negative ones. In these graphs it is apparent that the mean teacher expectations as obtained by classroom ratios tend to decline from the second through the fifth grade. Then there is an upswing in the sixth grade. Boys are rated lower than girls and there are some differences observed by racial groups.

Despite the fact that it would be most appropriate to obtain longitudinal data on the same individuals over this period of time, it would appear that there are some significant implications here for affective social variables in schooling. They may be summarized as follows:

1. The process of schooling tends to reduce the self-competency of children over the grades.
2. The process of schooling tends to be relatively ineffective in reducing group interaction problems.

3. The process of schooling tends to reduce the frequency of self-control or self-management problems. Children generally become more restrained.
4. Schooling results in increased verbal and cognitive-motivation deficits in children.
5. Schooling results in increased poor attitudes towards the experience.
6. Boys are treated differently from girls.
7. At the same time children are becoming less self-confident, less verbal, less cognitively motivated and more disillusioned with school, teacher judgments and expectations for them are becoming more negative.

## 2. Differences Between Districts

A second problem of this study was to determine what might be learned about differences between school districts. There were three districts included in this study. District A was a Southern University City. District B consisted of schools within the suburban area of a Northern City. District C represented the inner-city schools of a large Middle-Southern City.

Differences between school systems have always been a concern to administrators and school boards. The differences are often obtained only on socio-economic or achievement test data. Typically, administrators look at mean student achievement test scores and draw conclusions about the quality of the educational effort from these data. Thus a principal might note that his school is at the 60th percentile on a given achievement test based on his students' scores. He might not consider this very good. But if the mean of his school's achievement were arranged in a distribution with other schools

it might be that his comparative rank would be at the 80th percentile since the variability of student's scores is much greater than the variability of mean classroom units. Lindquist (1966) has argued for the determination of special distributions to reflect differences between classroom units and/or schools.

Using the factor score values obtained from the factor analysis of the problems data and teacher ratios (see tables 3 and 4), a series of discriminant analyses were completed in accordance with a procedure described by Bock and Haggard (D.K. Whitla, ed., 1968). Discriminant analyses were run comparing the three districts by racial groupings, and also by grade levels. To detail all of these findings here would be inappropriate and detract from the major argument of the paper. However, one example will be given relating to differences obtained between districts on overall racial group means.

One of the byproducts of the discriminant analysis program used was a multiple step-wise discriminant analysis. In this procedure the major difference between the districts is identified first, and then covarying the first difference, other differences are indicated. Black and White male classroom units showed significant differences thus: (1) teacher expectations (factor 1), (2) physical skill+ attitude deficits (factor 4), (3) vocational + cognitive deficits ( factor 6), and (4) group interaction deficits(factor 3). For the Black and White female classroom units only teacher expectations discriminated between districts(factor 1).

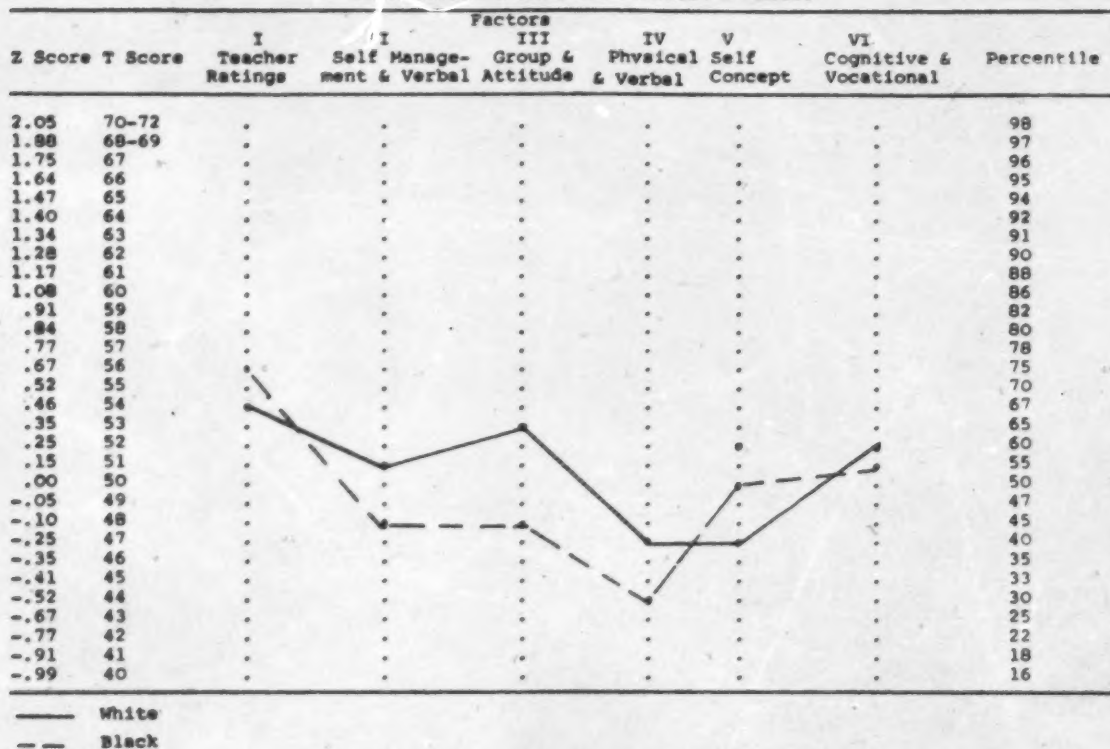
The illustration of the profile of classroom means may aid in looking at the differences obtained between the districts. Figures 16-20 provide a visual portrayal of the comparative frequency of problems and teacher ratings between districts. These profile tables include not only the z score and t score equivalent, but an approximate percentile value for interpreting z scores.

With the aid of the multiple step-wise analysis one may observe that District A. (Southern University City) shows high teacher ratings for both males and females. The mean level of group interaction and attitude towards class deficits appears to be high for White males. Both White and Black males in this district tend to show a higher mean proportion of cognitive and vocational problems. White females in this district tend to have higher mean levels of group interaction, and verbal deficits. District B ( Northern Suburb ) shows average teacher ratings for males and slightly elevated self-concept deficits for Black males. Female mean factor scores for teacher ratings appear low, and vocational development means are high. In District C ( Southern Midwestern Inner City ) the mean teacher ratings are low for males and for Black females. Only White females obtain a high mean teacher rating. In addition, White males appear to have a very high comparative mean on self-competency ratings.

This brief analysis demonstrates how differences between school systems on social and affective variables can be observed. It is also possible to compare grade levels or special groups in this same fashion. The methods exemplified here provide

Figure 16

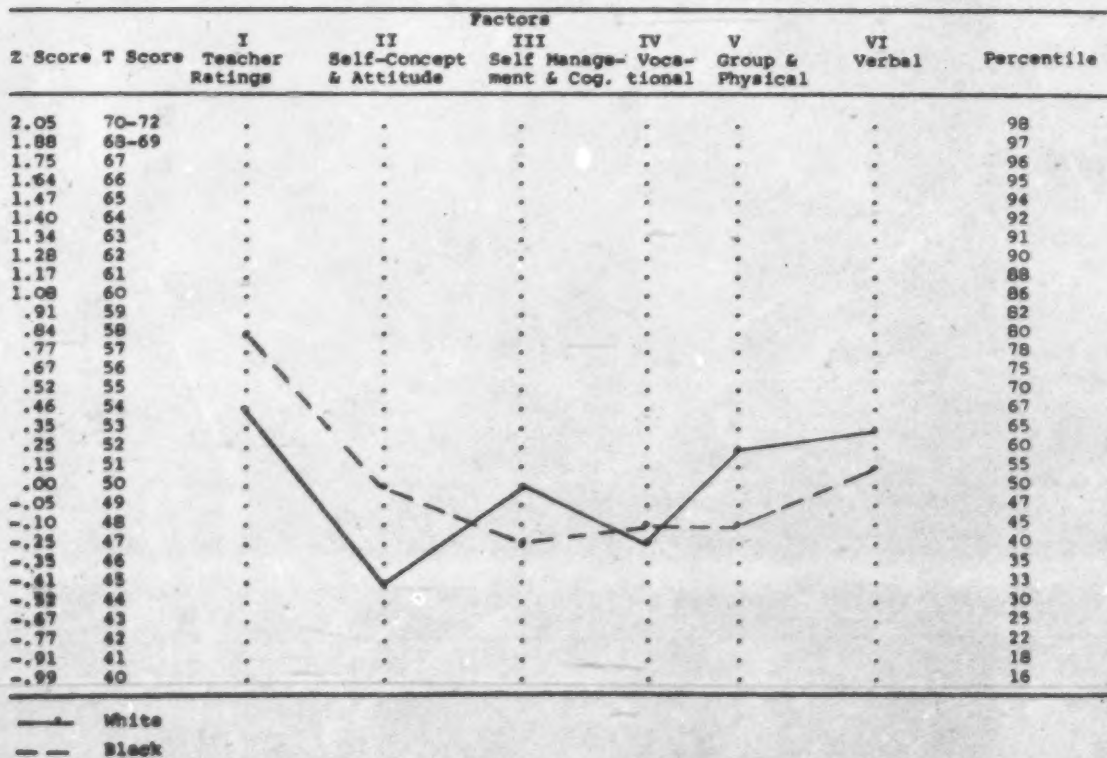
Mean Factor Scores for District A Males



N = 17 predominantly Black classrooms and 20 predominantly White ones.

Figure 17

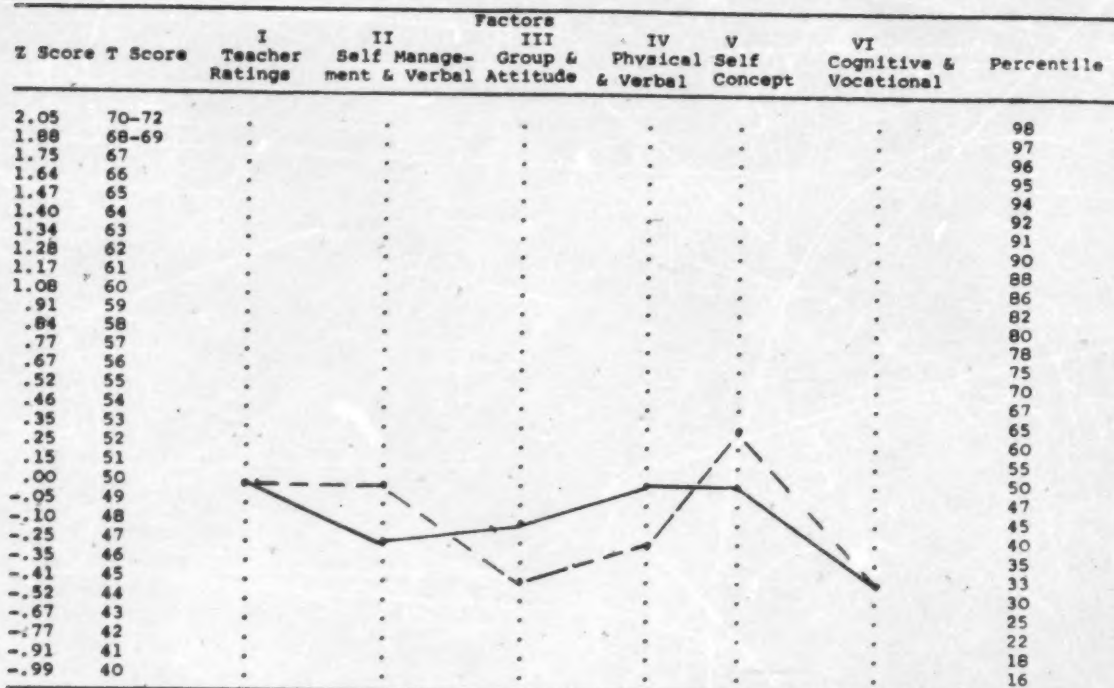
Mean Factor Scores for District A Females



N = 17 predominantly Black classrooms and 20 predominantly White ones.

Figure 18

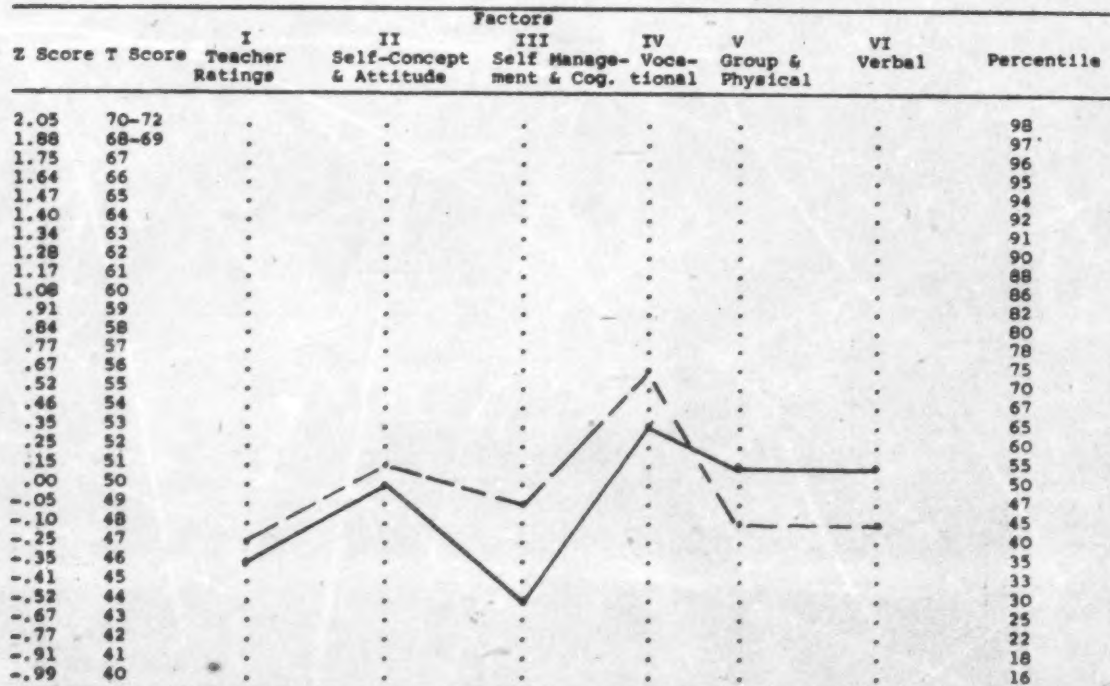
Mean Factor Scores for District B Males



N = 13 predominantly Black classrooms and 14 predominantly White ones.

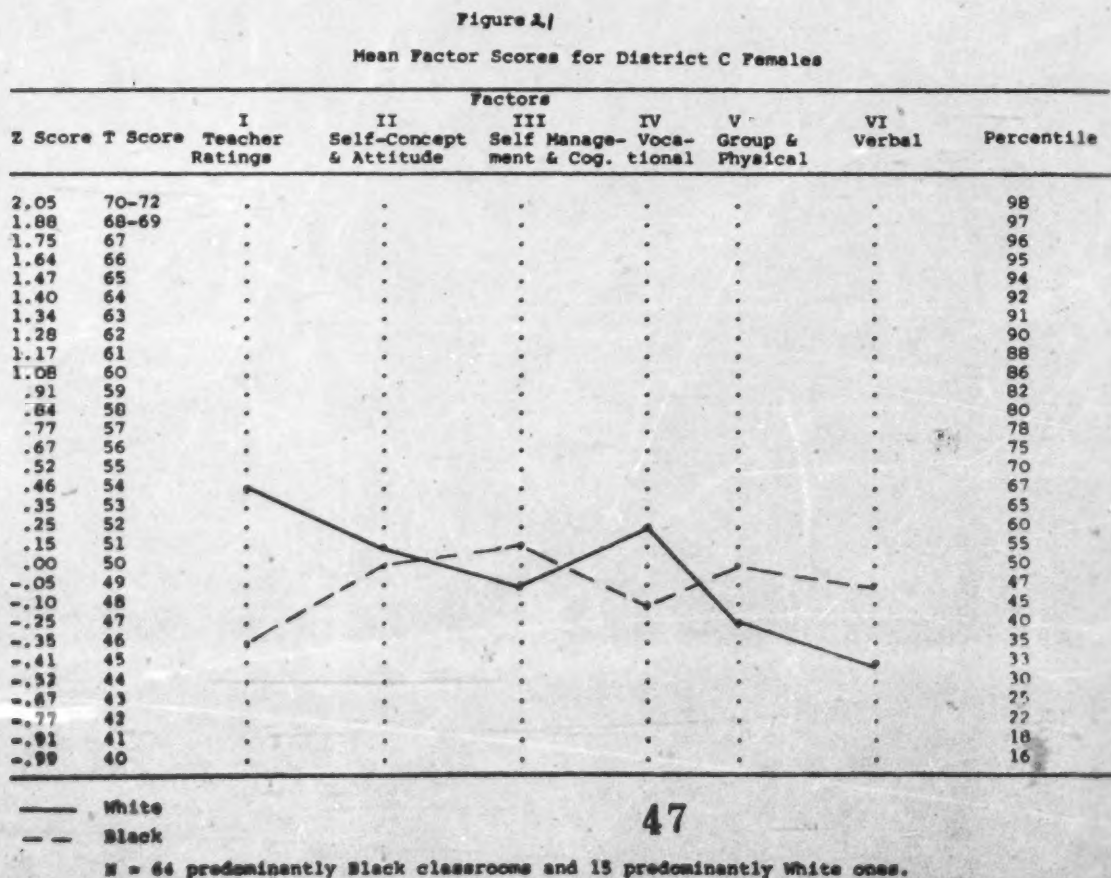
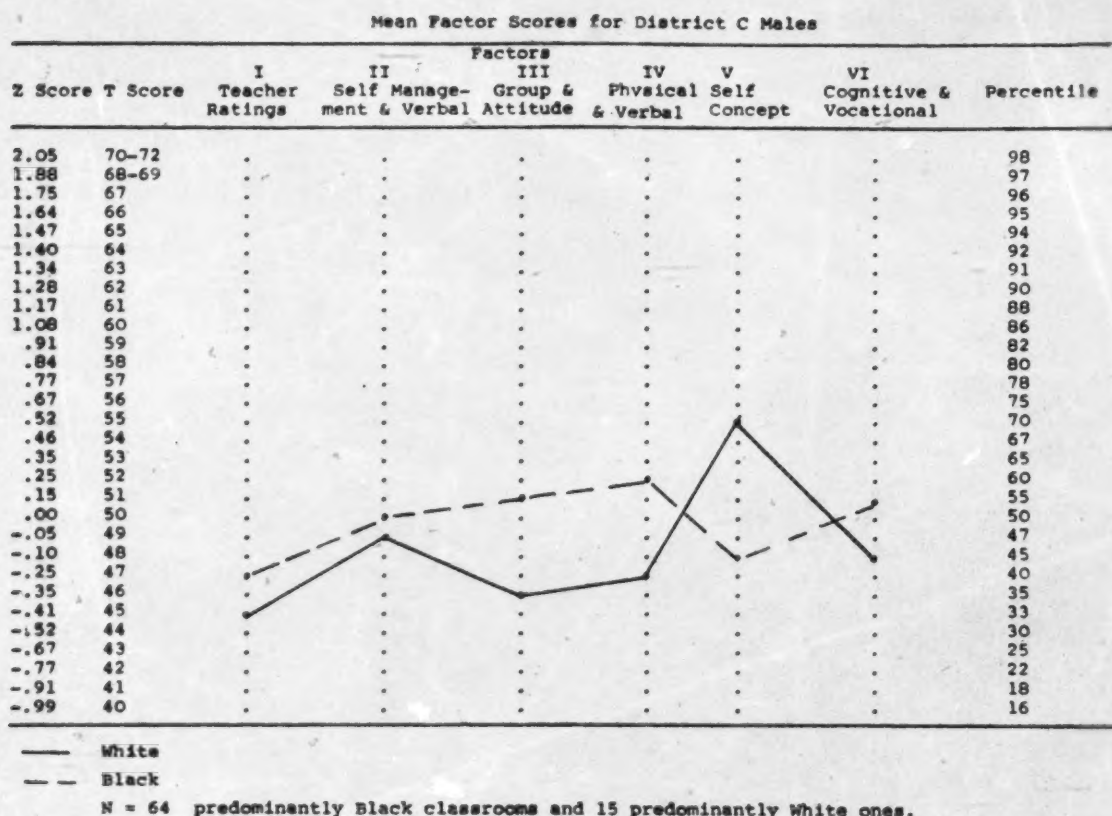
Figure 19

Mean Factor Scores for District B Females



N = 13 predominantly Black classrooms and 14 predominantly White ones.

-34 -  
Figure 20



a limited example of how this technique can be used to describe differences between districts. With larger samples, and perhaps by regional samplings it would be possible to take a look at the affective and social-interaction needs of large areas. With the inevitable restriction that comes with expanded efforts to effect change in the schools, and the short supply of resource personnel, such a technique can provide a means for identifying the overall needs of districts. Still further, specific problem areas can be pin-pointed. Other variables such as percentage of racial composition, socio-economic status and achievement data can also be entered into the descriptive analysis of districts.

### 3. Differences within Districts

The third problem of this study is describe how intra-district differences can be analyzed. The importance of this problem is obvious since it provides the district with the specific information needed to design interventions. For though District A in the previous comparisons fared relatively well by comparison with the other two districts, it is still important to consider how grades and schools within this district differ from each other.

In District A four schools containing 37 elementary classrooms were tested on the BCCI. Again using factor scores of problems and teacher ratings a multiple discriminant analysis was completed. The findings for this analysis will be summarized here.

A look at the discriminant analysis data provided for this District allows the following possible descriptions of the four schools.

School #1

This school is characterized by a low mean on teacher judgments. Males tend to show a high proportion of physical skill deficits. Females show a high proportion of attitude towards school, cognitive-motivation and self-management deficits.

School #2

In this school the mean proportion of disruptive and self-management behaviors is high for males. They also show a high proportion of cognitive-motivation deficits. Females show a high proportion of poor attitude towards school and also a high proportion of self-management deficits.

School #3

Males in this school tend to have a high proportion of self-concept problems. Females show a high proportion of verbal problems. This school tends to have a low teacher evaluation of males and a high evaluation of females. There are very low levels of disruptiveness or cognitive problems evidenced. Males also have a high proportion of poor attitude towards school.

School #4

Both males and females receive very high mean teacher ratings. Males tend to show a high mean proportion of self-management problems. Females show the lowest mean percentage of problems for females in the district.

Empirical observations of these schools by the writer and discussions with staff working with these schools in a Teacher Corps program confirmed the accuracy of the data analysis. Schools # 1 and #3 are traditional in the sense that control of behavior and cognitive task-order skills are stressed. The schools themselves are old and arranged in a conventional model. Schools #2 and #4 are modern in their school plant and curriculum approach.

Differences within the schools themselves can also be

looked at using either the generated factor scores for the problems that are unique to the district or the frequency of problems data obtained directly off the printout. The advantage of the first approach in analysis is considerable if the school district is large enough to warrant a separate factor analysis, the generation of factor scores, and a discriminant analysis. For small samples or schools the procedure is not warranted and reference can be made to the normative group of classroom means percentiles.

These data then provide some comparative analysis of differences between districts. The same procedures can be utilized in the district itself comparing either grade levels between schools or total schools. In addition, it is possible to determine the characteristics of special groups of children, for example, children who are in foster homes, children who have been bussed, children who are gifted or who have learning difficulties. Though contrasts between districts may be of prime importance to regional units within a state or to a state, the focus for the local school district is on differences which exist therein. Thus, for example, of the four schools located in the Southern City District, one tends to have many unfavorable teacher judgments and a high incidence of poor attitude and self-concept deficits. Another tends to be very well-controlled but to have problems centering in disruptive behavior. A third shows considerable control of students. A fourth shows that boys and girls are treated differentially. These examples show how the inventory can be used by a school district to ascertain the proportion of specific problems relating not only to individual classrooms, but to grade comparisons between schools, and many other comparisons.

## PART II

### A Model for Policy Making

The research that has been detailed here has been directed towards meeting the criteria of a multiple-needs assessment system. There are a number of postulates that specify the strategy of approach. Some of these are as follows.

1. The chief purpose of the school is to promote adaptation to the environment. This includes not only basic skills in the academic area, but also and perhaps equally as important, social and personal skills.
2. Social skills, self-management skills, verbal skills, and physical skills have a continuing high priority in the elementary school system because without them the academic skills that serve as primary traditional targets of the school cannot be realized effectively.
3. Peer pressures and teacher expectations are major determinants of self-concept in children. The elementary classroom must be viewed as a constricted life-space in which vital support systems for psychological life and development are dependent on peer and teacher support.
4. Basic change agents of education must be found in the primary psychological support system within the classroom. This includes a support system for meeting teachers' needs and expectations as well as the utilization of the peer group.
5. Characteristic modes of adaptation or accomodation to the classroom interaction environment form the basis of both broad and specific temperament traits and states in individuals. This is not to denigrate the possible contribution of hereditary components, but to suggest that the self-regulating mechanisms of individuals and characteristic modes of approach to problem-solving are strongly mediated by a succession of reinforcement and modeling contingencies as well as a subjective construct system that monitors attempted behavior by the quantity and quality of success or failure experiences.

#### 1. Preventive Intervention

The methods that have been detailed here have been directed towards the first step in a prevention-intervention model. That step is to develop an instrumentation capable of identifying individual characteristics in a group setting. These characteristics

must include non-cognitive variables. For traditionally, and with recurrent emphasis in the research literature the only viable criterion of the process of education has been the achievement test score. And yet, Cohen(1970), Gintis (1971), and Holtzman (1971) state that academic grades and achievement test scores do not predict success in future life. Averch and his colleagues (1972) conclude that achievement tests are by and large unsatisfactory since they are being used repeatedly and increasingly as a measure of accountability and performance objectives.

Though many have recognized the need for measuring variables relating to social interaction, self-esteem, self-management and the like, there simply has been no single battery appropriate at an elementary level. Moreover, what has existed has relied exclusively on single-input measurement systems such as self-report. The existence of the present methodology provides information regarding a diagnostic triad of methods. Obviously the data exists as a set of pooled perceptions, but perceptions lead to expectations, and expectations mediate behavior. These pooled perceptions then provide a set of clues that potentially can approximate medical diagnosis methods.

There is much that we now know about educational diagnosis. We know that a pupil's achievement is strongly related to his own educational background and social class as well as to the educational backgrounds and aspirations of other students(Coleman,1966). We know that measurements of achievement and grades do not correlate significantly with success in later life. We know that large scale compensatory education projects and intervention programs have short-lived consequences. "Virtually without exception, all of the large surveys of the national compensatory education programs have shown no beneficial results on average. However, the evaluation

reports on which the surveys are based are often poor and research designs suspect . . . . There is considerable evidence that many of the short-run gains from educational intervention programs fade away after two or three years if they are not reinforced. Also this 'fade-out' is much greater for the more highly structured programs, which are most unlike public school practice " (Averch et al., 1972, p.125). We know that expectations at all levels of educational intervention are a mediating force on patterns of covert and overt reinforcement (Brophy and Good, 1970; Beez, 1968; Coleman, 1966). We suspect strongly that alternate instructional approaches, teachers' expectations and needs, childrens' personality and temperament characteristics all interact in some complex manner (Cronbach and Snow, 1969). We know from much experience that our orientation towards problems in education has been crisis-oriented with a focus on the reconstruction of monumental problems rather than prevention. Finally, from the extensive survey detailed by Averch using reviews of educational research grouped under five known methods: (1) the input-output approach, (2) the process approach, (3) the organizational approach, (4) the evaluation approach, and (5) the experiential approach, we can conclude that no single approach alone can provide the necessary research guidelines for educational policy making.

These judgments lead me to conclude that educational change to be effective will have to be focused on the primary unit of interaction, i.e., the classroom. The diagnostic inferences provided by the present system function as clues. These clues may be compared to medical symptoms. For example in the question of medical diagnosis relating to coronary problems there are some

definite symptoms or signs. A symptom of possible heart involvement might be shortness of breath in walking upstairs, a sense of pressure in the chest, poor circulation, protracted tension, overweight, excessive smoking, lack of exercise and the like. When all of these clues are put together with age factors and family history there is a rather good predictive possibility of a heart attack. The predictive features of these symptoms and clues are lessened by specific interventions designed to reduce weight, control the diet, gain more exercise and the like. The diagnosis or predictive judgment is fitted not only to what the individual himself does, but what he does within the constraints and in reaction to his hereditary, and social environment.

Specific to the educational environment what this means is that diagnostic clues arrived at from a multiple needs assessment system may suggest differential treatments. If within a given district, school A tends to show a very low teacher evaluation and many poor attitudes towards school as well as behavioral problems, then it may be relevant to aid this school through a behavior modification or structured curriculum approach. If school B has many deficits in self-esteem and group interaction it may be relevant to develop a curriculum or counseling procedure that accents the development of self-competency skills and verbal interaction processes.

In the past we have been all too prone to try a single new curriculum vehicle for an entire district. Or we may be persuaded to institute this or that approach. What seems evident from the literature is that no single set of approaches works best with all children and teachers. Some children may learn reading best through a kinesthetic approach. Others through a visual modality. Still others may do better with an auditory approach. Probably all

will gain something from each approach, but individuals can profit and accelerate their own learning potential by maximizing a specific approach related to their needs and special capabilities.

The existence of the system and our efforts to utilize it in the school setting has led to further conclusions. One of these is that school personnel need to be trained to think in preventive terms. Doing this means that teachers, principals, psychological staff and top administrators must think about education in a "goodness of fit" relationship. Prevention means both identification and intervention. This means that a tentative strategy must be elicited by school personnel not only for dealing with suspected individual problems, but for considering needed curricular interventions for groups of students. Teaching school personnel about prevention means that they must not only be concerned about the overt behavior problems (that can be easily identified by teacher nomination alone), but also the many children who are shy, passive, reticent, and minimally accepted. Another conclusion about intervention is the fact that often intervention based on clues can take place before a problem has reached crisis level. Prevention takes much less intensive effort than remediation and reconstruction. Sometimes it simply means alerting school staff to the needs of individuals, suggesting more attention, specific reinforcement, developmental adjustments and alternate groupings. A third conclusion is that strategies of intervention can be broadly grouped into three categories: (1) information feed-back to school staff and children, (2) social interaction exercises and opportunities for social modeling, and (3) environmental manipulation.

It would be naive on my part to suggest that at our present stage of development we have learned precisely how to fit these three families of strategies to the suspected problems of children

as identified through the BCCI. But our experience thus far in working with schools suggests that many of the suspected problems of individuals can be approached on the first level i.e., information feed-back. By this level of strategies is meant providing information back to the student about how he is being perceived through counseling, audio or video feed-back, test analysis and the like. A byproduct of this feedback is understanding about the child's learning style, his interests and motivation. Often this results in changes of rules, a more flexible learning structure, the use of a resource center and the like. Both student and teaching personnel benefit from the exchange - particularly if teachers are attuned to methods of social reinforcement.

The second level is supplementary to the first and involves the development of social interaction and the use of exemplary models. Here study skills groups, groups relating to specific social skills, vocational exploration and the like can be skillfully used to develop both verbal interaction on a reciprocal level and confidence in problem-solving. In addition, the use of students as tutors for others with similar problems, assigned roles in psychodramas, community and teacher-aide roles and simulation games provide an excellent opportunity for social reinforcement and social modeling.

The third level is reserved for the more severe problems and includes environmental adjustments that include both the school and home environment. This may involve replacement in another group, special reinforcement and social learning techniques designed to develop self-control such as carrels, time-out procedures, desensitization techniques and the like.

Crucial to the implementation of strategies of intervention is the development of learning-development teams in the local school. These teams we recommend be composed of teachers, the principal, and guidance-psychological consultants. We believe that the logical coordinator of such a team is the school psychologist or well-trained guidance consultant. The data provided by the BCCI provides a starting point for strategy planning. Learning teams can either identify children they are concerned with independent of the BCCI printouts, or look at children who are identified as disruptive, and reticent. Since the BCCI does not provide achievement-intelligence test data, the learning team needs to take these data into consideration as well as their own observation of the characteristics of children. The computer process then provides assessment data for local learning-development teams to begin their own process of problem-solving. Patent remedies for what ails Susan cannot be suggested from assessment data alone. As in real life, what is and what can be done, moderates what will be.

## 2. Policy Making

One of the chief laments of federal, state and local administrators according to Averch(1972) is the fact that educational research fails to provide guidelines for policy making. Educational research has not addressed itself to considerations of the basic cost per pupil, overall district assessment, training needs and the like. There are many reasons for this deficit. For example, researchers are often split on the merits of "pure" versus "applied" research. They sometimes are not aware that the same ideas and constructs have been researched time and again. Laboratory studies of gains in one

method of teaching against another are often not verified by replication in actual teaching situations. Methods of evaluating change have often been tied to differences in achievement scores or mean gains using analysis of variance for groups. Where differential approaches are taken within classrooms or school units, the analogy between planting different types of corn in a field simply breaks down and suggests that analysis of variance, particularly on mean-gain achievement scores may not be relevant. This is particularly true in the strategy efforts we have attempted to develop.

Par<sup>E</sup>enthetically, we believe the aptitude-treatment interaction is the most appropriate of techniques for looking at differences in individual change. Often the criterion of change is not flexible or sensitive enough, the treatment weak or the statistical method inappropriate. All of these problems have contributed to the failure of educational research to develop guidelines for policy making.

We have postulated that multiple needs assessment beginning with individuals and moving to groups such as classes, grades and schools is the logical point to begin policy-making. The second step is logically dictated by the first. Once the characteristics of the district and groups within the district are known, then this information should be disseminated to various concerned and skilled groups for their discussion and problem-solving. From this process local targets, criteria and resources can be determined. With the determination of some specific objectives, criteria and methods of intervention, the district can proceed to design both the techniques of implementation and the evaluation procedures that will enable it to look at both the quality and quantity of change occurring.

There are obviously many intervening variables that occur in school experimental designs. For these reasons it is not always possible to utilize the most powerful research designs. Even where they are used, the process must be consistently monitored and the history of the effort taken into consideration. Evaluation should not only include some of the typical research methods, but efforts should be made to arrive at generalizations through the tracking of individuals on a longitudinal base. For what is most effective for whom under what circumstances cannot be obtained usually through the massaging of group data, but rather by the tracking of individual cases, the obtaining of both psychometric and behavioral base-line data, and the comparison of pre versus post treatment changes. By accumulating individual-treatment results we may ultimately arrive at an expectancy table capable of suggesting probable success ratios based on the individual-alternate-treatment equation.

Finally, as a by-product of the assessment-treatment-evaluation paradigm, feedback information can be obtained about cost effectiveness per pupil, needed training programs, differential staffing and many other pertinent educational issues. More and more effort, I believe, will be placed on intervention. Moreover, if the district is successful it is most likely that the need for special remediation and reconstruction approaches will diminish. To this end we might most likely see the development of specialized teams of learning development personnel who will address themselves to problems in self-management, cognitive learning techniques, vocational development, group process approaches and the like.

This development would make it possible to allow educational and psychological personnel to concentrate in a specific area of intervention. Such specialization would increase the overall effectiveness of the personnel and also provide the resources needed in the district for specialized interventions.

#### Summary

This paper has dealt with the problem of multiple-needs assessment both as it relates to individual and group differences and as it relates to possible conclusions for policy making in the local school. It is believed that the paradigm described provides some real advantages to schools not only in the assessment of non-cognitive and social-interaction characteristics of children, but in the design of experiments, identification of criteria and alternate strategies of intervention, and allocation of district resources based on the evaluation procedures.

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1 In 1956-59 I served as a school diagnostician in a suburban Detroit school district. It was here that the beginnings of this inventory occurred. There were many problem children that defied attempts at diagnosis and remediation. Consequently I began a series of studies to utilize peer and teacher judgments to ascertain the characteristics of individual children in the classroom.

In one study the interest patterns of 1,777 elementary and junior high school students were related to a sociometric device and teacher rating (Barclay, 1966a). The subjects were asked their preferences in a variety of class interests, including T.V. watching, music listening, vocational plans and the like. Results of the study showed that teachers' ratings and peer ratings differentiate between interest patterns and these patterns are associated with a broad extroversion-introversion continuum. A follow-up study (Barclay, 1966b) indicated that both the sociometric predictor and teacher ratings identified subsequent dropouts. It was found that 54 percent of the females and 64 percent of the male dropouts had sociometric and teacher ratings below the median on the data from four years earlier.

Using the data from the above first study the mean sociometric ratings and teacher ratings from 70 classrooms were analyzed in relationship to the age and sex of the teacher. Specifically it was hypothesized that social desirability measures such as sociometric ratings and teacher judgments represented a measurement of the environmental "press". Older male teachers tended to be most severe in their ratings of children and older female teachers tended to be most lenient. For boys in particular the best ratings seemed to be associated with young female teachers (Barclay, 1966c).

Still another study (Barclay and Barclay, 1965) related measures of visual perception to sociometric and teacher judgments. In this study six classes of third graders in the Pocatello, Idaho Public Schools were tested on a number of devices to determine level of perceptual organization. Of 24 hypotheses made regarding relationships between variables 19 were confirmed. It was concluded that perceptual organization and measured control of responses are factors relating to social desirability in children. On the basis of the foregoing studies a theoretical article was written (Barclay, 1966d) suggesting that social desirability and social skills are related to motivation for achievement and survival in the classroom.

With the development of the new inventory (the current BCCI) more studies were completed. One of these (Barclay, 1967) utilized the instrument as a criterion of change relating pre-post scores to three treatments tried out with some fifth graders. One treatment was to provide some modeling and social exercises in a classroom to increase the social desirability of isolates. Another consisted of training a teacher how to select out appropriate behaviors in isolates and reinforce them. The third treatment was a placebo one inasmuch as it consisted of changing the regular teacher to a teacher intern for five weeks. The results of the treatments indicated that the greatest changes in poorly accepted children were shown in the experimental group as a result of modeling and social group procedures. However, considerable changes also took place in the classroom where the teacher intern had replaced the regular teacher.

1 (continued)

Another study was completed by Brown (1967) and later reanalyzed by Stilwell and Barclay (Stilwell, Brown and Barclay, 1972). This pilot study tried out three different classroom or guidance techniques to help to raise the social desirability of rejected or isolated children in the fifth grade. The children were identified by the global sociometric device used in the earliest studies and low scoring children were assigned to three treatment groups. The first treatment was group counseling based on a transactional analysis approach. The second approach involved reorganizing children in small social studies groups in which boys and girls of high sociometric status worked with boys and girls of low sociometric status on projects. They were also permitted to sit near each other for this activity. The third approach was one that involved discussing vocational information with groups of low status children. There were six weekly sessions and all students were pre and post-tested on the BCCI. The original data showed some ambiguous results. However, in reanalyzing the data using the aptitude-treatment-interaction significant results were obtained for the vocational placebo group. The results of this study suggested that vocational information discussions seemed most effective in raising both high and low sociometric scorers' interests in status and mechanical occupations. Peer leadership judgments of unpopular girls raised. Many children became more assertive.

2

The suspected problem categories were the result of considerable research, and are based on inferences from that research. The steps included typical reliability and validity studies including: internal consistency and test-retest reliability studies, tetrachoric correlations between items in scales, scale correlations with other tests such as the Kuder, the California Test of Personality, the Children's version of the 16 P.F. Test, factor analysis procedures using both the principal axis and multi-method, multi-trait approach.

The convergent and discriminant validity of the BCCI was studied by Barclay and Elton (1973) using the test scores of 2000 elementary school children. A number of factors possess convergent validity in the sense that self, peer and teacher judgments of specific competencies load on a given factor (for example, self-social report, group social nominations, and teacher judgment of stable-extroverted behavior are the only variables loading high and significantly on the factor termed affiliation). Tapp (1972) developed another multi-method system and administered it to a sample who had also taken the BCCI. He compared the two systems and found that they generally agree.

However, the most important study for the determination of the suspected problem categories was a behavioral observation study completed in 1972 (Barclay, Stilwell, Santoro and Clark, 1972). This study, done in Corpus Christi Texas, involved the observation of classroom behaviors of 700 children over a ten day period. These children had previously completed the BCCI. A number of substitute teachers were trained in three observational techniques and spent ten days in observing student behavior. Approximately 300 of these students had multiple observations and were used in this study. The results of the observations, plus achievement and intelligence test data and BCCI results were used. Step-wise regressions were obtained using achievement data as dependent variables. Discriminant analyses were used on the basis of temperaments determined via the BCCI with observations the dependent variables. Finally, a multivariate analysis of behaviors was completed using BCCI categories as classifying criteria. Representative of the findings obtained are the following: (1) girls who are judged to be shy and reticent on the BCCI do not often raise their hands in response to teacher questions; (2) boys who are called on often view themselves as above average on enterprising and leadership skills, (3) both boys and girls who are classified as unstable extroverts on the BCCI tend to raise their hands more often, talk out loud, and are more prone to stand up at their seats; (4) girls who do well in arithmetic are viewed by their peers and teachers as possessing outdoor-masculine and intellectual skills, tend to have a higher I.Q., are interested in occupations that call for competition and risk-taking, are less interested in peer female reinforcers, more interested in male reinforcers and tend to receive less favorable ratings by teachers; (5) boys who do well in arithmetic appear to be viewed by teachers as stable introverts, are seen by the peer group as quiet but effective leaders, generally have a higher I.Q., appear to be less interested in artistic and creative occupations, do not appear to attend as well as others to on-going classroom activities nor do they raise their hand and volunteer as often. Thus this study tended to confirm the fact that the BCCI variables do possess behavioral correlates as obtained from actual classroom observations.

2 (continued)

On the basis of this research, a series of conditional "if" statements were entered into the computer. These conditional statements exist as criteria for decision-making. For example, if a child receives a high number of reticence nominations from his peer group, sees himself as comparatively ineffective in social behavior, and receives a high rating on the unstable-introversion scale as checked by teachers, an asterisk is placed under the category of verbal skills next to his number. The same set of procedures are followed for each of the suspected problem categories.

In the research and User's Manual, the point is emphasized continually that these indicators are suspected problems and need to be confirmed by further observation in the classroom.

3

The teacher rating scales are formed by grouping various adjectives together. Both positive attributes and negative ones are described by the adjectives. The teacher ratio is obtained by summing the total number of positive adjectives chosen for all children and the total number of negative adjectives chosen and using the following formula.

$$\text{Ratio} = \frac{(\sum \text{Positive}) - (\sum \text{Negative})}{N (N-1)}$$